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ACUTE OSTEOMYELITIS*

BY

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I confess I have found it difficult to decide as to the best method of introducing the discussion of acute osteomyelitis. If I called it an "old friend" I would not be exaggerating, for certainly there is nothing of the parvenu about it, and yet its very familiarity is the subject of disconcerting thoughts, for we must confess that there are many problems relating to this condition which are still unsolved. We may therefore regard this choice of subject as suitable and appropriate.

I feel that it would not serve any purpose to present an outline of the subject on the basis of aetiology, pathology, etc.—these are already fully accepted and established—and I therefore prefer to treat the subject from what I might call a personal point of view, and to recall in what I am afraid may be a haphazard fashion certain of the more problematical, and therefore more interesting features of the disease. I do so in the hope that the discussion (which is, after all, the most fruitful source of enlightenment in a meeting of this kind) may throw some light upon points which to me are brimful of difficulty. Perhaps it is well that I should indicate that what I have to say applies to the acute staphylococcal infection of growing bone.

Incidence of Staphylococcal Osteomyelitis

In recent years it has been said that staphylococcal osteomyelitis is a disappearing disease—a statement with which most of us are in agreement. A statistical survey by Cecil Wakeley, based upon the analysis of hospital cases recorded in the decades 1900–10 and 1920–30, appears to bear out the truth of this statement, and it is held that the lessened incidence is explained by improvement in the general health conditions of the people, and by beneficial changes in the housing and sanitary arrangements. It has been our experience that, while this appreciation is in general correct, there has been, during the past year, a curious increase in the occurrence of the disease. This is borne out by a presentation of the numbers of osteomyelitis cases admitted year by year to one surgical charge in the Edinburgh Royal Infirmary. Over the decade May, 1924, to May, 1934, the figures are as follows:

3, 4, 2, 3, 3, 4, 5, 7, 5, 12 (48 cases).

I agree that it may be merely a coincidence, but I suspect that it may have a more stable explanation. Are the more susceptible individuals of the population entering on a phase of lessened immunity, or is the increase of staphylococcal infection a single example of a state of increased, and it may be increasing, coccal infection? I understand there has been, for example, in the autumn and early winter a definite increase in the incidence of streptococcal infections, particularly of the haemolytic type, ascribable, in the opinion of some, to the unusually dry character of last summer. I wonder if the increase of staphylococcal incidence which we have experienced is attributable to the same influence.

Pathology

The conception of the pathology which is universally accepted is an infection of the marrow area of the bone metaphysis conveyed by the blood stream. No valid reason has ever been advanced in dispute of this view, and all experimental evidence supports its reasoning, but there is one aspect of the pathology which is not so frequently alluded to, and yet I believe that it may hold features of great significance. The haemic theory of staphylococcal osteomyelitis infection adumbrates of necessity a pre-existing staphylococcal septicaemia. I agree that the general infection may be difficult to demonstrate; I appreciate that attempts to exhibit the existence of the organism by blood culture are in the majority of cases without result; but none the less a haemic infection of a bone presupposes that staphylococcal organisms are already circulating in the blood stream, and that their localization in the bone is but a local manifestation of the general disturbance.

To the surgeon the local infection has been the important item in the clinical picture—it is upon this that he has concentrated his ingenuity and his skill; but is it right that we should regard the local focus as a most deplorable and regrettable manifestation? There is such a thing as a fixation abscess; when it appears it is regarded as a providential occurrence, for it is Nature's method of producing a defensive area from which the factors of immunity are organized and developed. From what I have seen of acute osteomyelitis the impression is growing that the focus in the bone, while it creates a difficult and regrettable situation so far as local infection and suppuration are concerned, has certain aspects which can only be regarded as defensive in their action and salutory in their effects. It is obvious that if this conception is accepted the decision will logically follow that we must reorient our attitude towards the treatment and, in fact, towards the clinical progress of the disease.

The degree of severity of the general disturbance in cases of acute osteomyelitis shows considerable variation. In a certain percentage of cases the general infection is so acute that the individual is overwhelmed in the early stages of the disease with the signs and symptoms of an intense general infection, and, as a rule, succumbs before the local evidences are manifest or confirmed. In others the general disturbance is less intense, while the picture is that of a pronounced local inflammatory reaction which quickly passes on to suppuration. If we express this

* Read in opening a discussion in the Section of Paediatrics at the Annual Meeting of the British Medical Association, Bournemouth, 1934.

variation in terms of pathology we may argue that in the first instance the intensity of the general infection has been in large measure dependent upon a deficient local reaction, while in the second instance the antibacterial influences released from the local focus have been efficient in counteracting the more general sepsis. If I may put the matter in a more personal way, I feel infinitely less anxious about the future of the osteomyelitis case when there is a pronounced local bone focus with early suppuration than I am when the local reaction is indefinite and suppuration absent or delayed.

Localization of the Infection

I wonder how many of us have asked ourselves why it should be that the infection of acute osteomyelitis is localized with such a remarkable degree of constancy to the metaphyseal areas of long bones? When the question is raised we are told that the localizing influences are a profuse but rather stagnant blood supply, the tissue activities of rapid growth, and the possibilities of trauma. I do not know that there is much to support any of these arguments, and in regard to the last the bulk of clinical and experimental evidence appears to negative its importance.

I venture to suggest another possible reason. The marrow of all bones, and of long bones in particular, contains a large amount of reticulo-endothelial tissue. During the period of growth, and more especially in those years when the epiphyses are being ossified and the epiphyseal plates are putting forth their greatest effort, there is an immense concentration of reticulo-endothelial cells in the metaphyseal area, where, under the demands of health, they are concerned with various phagocytic functions and the requirements of calcium metabolism. Now there is a growing volume of evidence that in the presence of general body infection the reticulo-endothelial arrangements form one of the most important defensive mechanisms of the body. We find indications of its response in septicaemia, and there are those who believe that when local suppuration appears in relation to the general infection its localization in joints or in the pleurae is an evidence of the reactive activities of reticulo-endothelial tissues.

I know that the argument is difficult to prove, but for myself I have a suspicion that in acute osteomyelitis the bone disturbance is but a local evidence of a general infection, and that the reason why the local infection is so constantly localized to the metaphysis is conceivably because we there encounter a concentration of reticulo-endothelial tissue, and that the local suppuration which results from the defensive activities of the area is in some measure protective against the general disturbance. I anticipate that this thesis will give rise to criticism, and I hope it may stimulate discussion. If space and time allowed, I would elaborate the argument to a fuller degree, but for the present it is sufficient to say that as time goes on I feel that there may be a considerable measure of truth in the theory.

Operative Treatment

It is obvious that, if one believes what I have attempted to define, one's plans of treatment must be considerably influenced by one's views, and so it has been with me. I confess that I am conservative in the matter of operation, and by that I mean that I am an advocate of what has come to be known as the Starr technique in a form which is perhaps even less extensive than that recommended by the one whose name is associated with the method. I confess I am disappointed with the results of the gutter operation, and I regard any attempt at diaphysectomy as utterly wrong in principle and ideal.

Let me describe the procedure as it is actually practised. When the diagnosis is established the infected area is exposed through a suitable incision, and, if the situation permits it, a tourniquet is used. Having exposed the affected metaphysis, the periosteum is separated, and any pus which lies in the subperiosteal area is mopped away. By means of a drill one-eighth of an inch in diameter the cortex of the metaphysis is perforated in a number of places, beginning at a point central to the epiphyseal cartilage and extending along the shaft until healthy marrow is reached. In order to lessen the risk of infecting healthy marrow, a series of drills should be available, and each should be sterilized before each successive use. The ideal is to render the cortex as porous as possible without inflicting undue disturbance upon the parts, and to attain the ideal it may be necessary to drill the cortex at intervals of a quarter of an inch over the entire area related to the infection. Through the puncture points pus and blood exude as the tension of the underlying infection is released.

The wound in the periosteum and the soft tissues is left entirely open, the part being lightly packed with sterile gauze soaked in a solution of liquid paraffin, acraflavine, and potassium citrate.* Each of these substances is understood to fulfil a special purpose—the citrate keeps the discharge in solution and so prevents the bone punctures from becoming blocked, the flavine is of course an antiseptic, which lessens the likelihood of infection spreading into the soft tissues, while the liquid paraffin facilitates subsequent removal of the gauze. Over the packing a copious gauze and wool dressing is applied, and complete immobilization is thereafter secured by encasing the limb in plaster so as to include the related joints above and below the site of the lesion.

The original dressing is kept in place for a fortnight, at the end of which time it becomes uncomfortable, and so it is our practice to remove it under light anaesthesia, to examine the wound, remove any obvious sepsis, and pack the wound afresh. A new plaster casing is applied, and in this instance it may remain *in situ* for a period of a month or six weeks. At the end of that time the wound is again examined, any sequestration which may have occurred is removed, and an attempt is made to close a section of the wound by secondary suture.

Treatment of General Condition

In a favourable case the temperature begins to fall about forty-eight hours after the operation. If on the third day it does not show signs of improvement an antistaphylococcal immuno-blood-transfusion is given, the donor having been prepared by a vaccine injection estimated on a basis of 500 million to 750 million organisms. It is my experience that an ordinary blood transfusion is of virtually no value in correcting the general sepsis, although in late cases when anaemia exists it may be of value. We have given sera what we regard as a very fair trial, using a staphylococcal serum of a polyvalent type, but we have never been satisfied that this had a beneficial effect upon the disease, and, when put to what must be regarded as the acid test—its employment in the most severe cases—it had no appreciable influence upon the progress of the disease. In so far, therefore, as the treatment of the general condition is concerned we rely upon such principles as an abundant supply of fluid, a high vitamin intake in the form of orange juice, and the use of immuno-transfusion in a certain number of cases.

Acute staphylococcal osteomyelitis must always be a serious disease, because it implies a general blood infection and the development of local sepsis in a tissue which

* The solution is acriflavine emulsion 1 in 1,000 with potassium citrate 2 per cent.

for many reasons is intolerant of such disturbance, but we have found that, if we employ a local interference which ensures relief of tension without unduly disturbing the local reaction, the results are often surprisingly good. I have therefore gone upon the principle of regarding acute osteomyelitis as a local infection which is a reaction to a septicaemia. I have viewed the local error as having a certain potential value by increasing resistance to the general infection, and on this assumption we have been satisfied with an operative procedure which ensures relief of tension and as free drainage as is possible without unduly disturbing the local tissue reactions.

Other Operative Procedures

I have abandoned the gutter operation because it did not appear to afford any more efficient drainage than that provided by the method of multiple punctures, while the trauma necessitated by the operation lessened the degree of reaction and encouraged sequestrum formation. In the same way any attempt at curetting the infected marrow encourages an embolic spread of the disease and removes the tissue segments upon which an efficient reaction depends. It has been suggested that, instead of guttering the bone, more efficient drainage might be obtained by removing 3/4 in. of the bone circumference.

As a matter of fact this was attempted in one case, but the result was a sequestration of the remaining segment, with a state of affairs which amounted to an extensive pathological fracture.

The suggestion which has been mooted and in some cases practised, that a metaphysectomy or partial diaphysectomy should be carried out, is to my mind a wrong procedure, and the high mortality which is associated with the operation is probably due to the fact that by this means we remove the actual segment of tissue upon which the patient's resistance to the general infection may well depend. This procedure, if considered at all, should be restricted to late cases in which the entire diaphysis has become necrotic and is lying in a large subperiosteal abscess. In this event the dead shaft is already detached at each metaphyseal extremity, and the operation amounts to nothing more or less than a sequestrectomy.

Results of Operation

I conclude this somewhat disjointed discussion of the disease with a summary of the operation results. In a total of fifty-six cases observed over the last twelve years there have been thirteen deaths, a mortality of 23.2 per cent. In those who succumbed, death was due to a progressive septicaemia which ultimately passed into a pyaemia with secondary abscesses in such varied situations as voluntary muscle and subcutaneous tissue, the heart muscle, the lungs, and the brain.

S. Bueno (*Thèse de Paris*, 1934, No. 606) states that two bodies were responsible for the prophylaxis of malaria in Cuba—the State, which supervises the towns and suburbs, and the sugar companies, which are concerned with the regions in which the sugar cane is cultivated. The areas occupied by small proprietors have hardly any prophylaxis. The campaign undertaken in the towns has caused a complete disappearance of yellow fever and the almost complete eradication of malaria, especially in Havana. Considerable improvement has taken place in the country districts as the result of the measures undertaken by the American sugar companies. The apparent increase in the incidence of malaria during the season in which the sugar is produced is due to the movements of the workmen, a large proportion of whom are infected. The selection of workmen therefore appears to be desirable, only those being taken on who are free from malaria.

FUNGUS INFECTION OF THE FEET:

PROPHYLAXIS AND TREATMENT *

BY

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Fungus infection of the feet has loomed large in the practice of dermatologists during the last twenty years or so, and in no subject in this branch of medicine has investigation been more insistently pursued and more fruitful results obtained. At the same time there are many lines of investigation which remain to be followed, and, until certain further problems are solved, many difficulties as to prophylaxis and treatment will continue.

It is not necessary for me to enter into a description of the fungi which attack the skin of the feet: suffice it to say that a considerable number of different fungi of the hyphomycetes group have been found present in these cases, and also that yeast-like organisms, generally classed under the name "monilia," including the organism of thrush *Monilia albicans*, have also been incriminated. Inflammations of the skin by fungi can take place in two ways: first, by the growth of the fungus in the horny layer and on the horny appendages (the hair and nails), the fungus having been implanted from without on the affected area; or secondly, by transmission of the fungus or its toxins from a local site of infection by way of the blood stream to a distant site. In this latter case some sensitization of the epidermal cells appears to be a necessary preliminary to the production of the inflammatory reactions. Reactions of this type are spoken of as "dermatophytids."

Clinical Types

Clinically, fungus disease of the feet may occur in several forms. For the sake of convenience they may be divided into three types, though some dermatologists prefer a more elaborate classification: C. J. White (*Arch. Derm. and Syph.*, April, 1927, xv, 387), for example, describes eleven types.

The types most commonly seen are: (1) the intertriginous, (2) the vesicular, and (3) the hyperkeratotic. It may be noted, however, that various combinations of these types may occur.

Intertriginous Type.—This is by far the most common, and is found between the toes, often only in the fourth interdigital space, and nearly always bilaterally. In more advanced cases other interdigital spaces are involved, as is also the fold beneath the toes. In the mildest cases perhaps only slight scaling is visible in the fourth interdigital spaces; in more chronic cases the skin of the sides of the toes becomes much thickened, appearing as a dirty white layer, owing to a great thickening of the horny layer. This thickening may occasionally become much more marked at one spot, and a so-called "soft corn" may develop. Generally the skin in the web between the toes cracks, and this crack may extend beneath the toes. In the more active cases an eczematous eruption, of either a dry or a moist character, may spread over the dorsum of the toes and anterior part of the foot, and on to the anterior part of the sole. In the most acute cases the lesions may be vesicular or bullous from the start; in fact, Whitfield states that most cases commence in this way, though on this point I am not in entire agreement with him. In this type of case secondary pyogenic infection is liable to occur, and lymphangitis may be an occasional complication. In the intertriginous

* Read in opening a discussion in the Section of Dermatology, at the Annual Meeting of the British Medical Association, Bournemouth, 1934.

cases there is frequently involvement of the toe-nails; this is not always obvious clinically, though in many cases thickening, opacity, and brittleness of the nails may be present, but the fungus can often be found in nails which show little variation from the normal.

Vesicular Type.—In its most typical form this variety is seen as a collection of deep-seated vesicles, from pinhead to a lentil in size, usually occurring in fairly circumscribed groups on the soles of the feet, most commonly on the instep or ball of the foot. There is usually some diffuse redness surrounding the vesicles, and the patch may be sharply circumscribed and may spread by peripheral extension, or the patch may be less well defined. The vesicles vary from quite a few up to a large number. They usually appear slowly, but sometimes the whole skin of both soles may become covered with vesicles in a few hours. Although in some cases fungus can readily be demonstrated in the scales, in others repeated examinations fail to reveal its presence, and the same applies to similar lesions on the hands. It has been shown without much doubt that some of the cases belong to the group of dermatophytids, and are not direct infections. Many cases which in the old days were called cheiropompholyx or dysidrosis are now known to be fungus infections. It is not possible here to enter into a discussion on the differential diagnosis of other vesicular and pustular eruptions of the feet.

Hyperkeratotic Type.—This form also occurs on the soles as a chronic eczematous condition, associated with much thickening of the horny layer, which is imperfectly formed and therefore liable to fissuring and exfoliation. It is most marked over points of pressure—the ball of the foot and heel. Luckily it is not such a common type as the two preceding ones.

This is a very cursory survey of the great variations which may be seen in fungus infections of the feet, but it will be noted that they are all types of an eczematous reaction, and although some of them are sufficiently typical to enable a clinical diagnosis to be made readily, others require a careful hunt for fungus before a definite diagnosis can be arrived at.

Treatment

I will now turn to consider the main subject of this paper, prophylaxis and treatment, and as the former depends to a great extent on the eradication of the disease from the infected persons I will first deal with the latter.

In order to treat the disease we must realize as completely as possible the conditions with which we are dealing. In the vast majority of cases the fungus lives entirely in the horny layer of the skin and the nails (the hairs do not require consideration in this connexion). It is true that, as I mentioned above, fungus may get into the blood stream and be conveyed to distant sites, but in these cases, for various reasons I need not discuss now, the fungus does not develop at these distant sites, and if the local supply is stopped the distant effect ceases. When fungus attacks thin skin—such as, for example, the thighs, as in tinea cruris (dhobie itch)—the fungus can be killed off in the horny layer with comparative ease by the use of appropriate fungicides, and can be killed off permanently. Recurrence, apart from reinfection, is rare when smooth, thin skin is involved.

It is the experience of everyone, however, that fungus affection of the feet is often difficult to cure and is prone to recur. The difficulty of cure is largely due to the great tendency that the fungus has to produce marked hyperkeratosis, which prevents the active agents from reaching it. Further, it is only in very severe cases that it is possible to prevent the patient walking about; sweating, pressure, and movement cause the disturbance of any applications in use, and also militate against the resolution of inflammatory products. The tendency to reinfection, in my opinion, is due to the frequent involvement of the nails. It is still an open question whether it is possible to cure infected nails, except by their removal, and it would be very difficult to persuade a patient to undergo this form of treatment for what appears to him an extremely trivial condition, one which he may never even have noticed himself.

Application of Antiseptics

The difficulties which have arisen in clearing up some cases have caused dermatologists to try a very large number of different antiseptics in the treatment of these infections, but I think it is more important to lay stress on the method of applying a few known antiseptics, rather than to ring the changes on a number of different substances. My personal experience has been confined to the use of relatively few antiseptics, and I propose to confine myself to these, rather than give a list of the various remedies recommended by different observers. One must first note that one is dealing with an eczematous condition, and where the inflammation is very acute strong antiseptics and greasy preparations are not well tolerated. This applies equally to eczematous conditions caused by other micro-organisms.

In the acute bullous and vesicular types I have found the most satisfactory results are obtained by baths of 1 in 4,000 potassium permanganate and moist dressings of the same solution. It is well to prick the larger blebs before treating in this way; it is important to keep such patients off their feet, and the permanganate dressings are applied in the same way as lead lotion is applied to acute eczematous conditions—namely, without oil-silk—the lotion being applied frequently, say every hour or half-hour, and free evaporation being permitted. When the acute phase has quieted down the baths should be continued night and morning, but linimentum calaminae, with 2 per cent. ichthyol added, may be substituted for the permanganate dressings. This is applied on lint, each toe being tied up separately, and the dressings changed only twice daily. When the redness has subsided and a dry scaly condition remains then Whitfield's ointment—which is made up as follows: ac. salicyl. grains 15; ac. benzoic., grains 25; paraff. moll. ʒ2; ol. lavand. ɱ4; coco-nut oil ad ʒ1 (in summer white wax may be substituted for the soft paraffin)—should be cautiously applied. It is rubbed in gently once daily, and the permanganate baths continued once daily. If any irritation is produced a return to the ichthyol should be made, and after an interval Whitfield's ointment should be tried again and continued until all scaling has ceased.

This treatment should suffice to cure a case, provided the nails are not affected. In all acute cases the horny layer exfoliates, so the difficulty of penetration of the antiseptic does not arise. Two objections have been raised to reliance on Whitfield's ointment in the treatment of fungus affections of the feet; the first is that it is not a sufficiently good fungicide. This, I think, is disproved by those who have had much experience of it clinically, but it has also been found experimentally by Gould and Carter (*Archives of Dermatology and Syphilogy*, August, 1930, p. 325, and February, 1932, p. 348) to be strongly fungistatic for three of the common fungi found on the feet. The second objection is to the use of an ointment. In the chronic cases localized to the interdigital spaces there may be some force in the argument, though from clinical experience I do not think there is much in it, but for diffuse subsiding eczematoid ringworms of the feet I am convinced that an ointment is superior to any lotion, as the latter produces uncomfortable cracking of the skin, which may delay recovery, and I doubt if penetration is so good. For dry eczematous cases affecting the feet the

treatment is the same as above, but the first stage—namely, permanganate dressings—can usually be omitted. When there is much diffuse hyperkeratosis of the soles associated with a good deal of underlying inflammation again the same line of treatment is adopted, but at a suitable stage small doses of *x* rays (one-quarter to one-third B given weekly for three or four doses) can be added. In some cases the use of salicylic plaster is indicated.

Localized Infections

I have referred above chiefly to the more diffuse types of eruption affecting extensive areas of the feet. We will now consider the more localized types. For superficial intertriginous cases, those with only slight scaling limited to the interdigital spaces and the groove beneath the toes, Whitfield's ointment again appears to me quite a suitable remedy. Here, however, it is well to continue the treatment for some months, even though no trace of the disease is visible. I usually also order a daily foot-bath of permanganate. Whitfield's ointment, owing to the salicylic acid which it contains, and to the keratolytic properties of which it partly owes its efficacy, tends to keep up the sodden appearance of the skin. I have therefore been in the habit of ordering a bland powder, usually one part of boric acid to seven parts of talc, and have told the patient to use this alternately with the ointment—usually alternate fortnights—but this depends rather on the condition when first seen. The treatment must be carried on for two to three months after the disappearance of all scaling. When there is much horny thickening it is first necessary to deal with this. I have found daily painting with salicylic acid spirit (1 drachm to 1 ounce), followed by friction with lint, or even pumice stone, effective.

Each day before the next application the foot is soaked in permanganate and as much of the thickened horny layer as possible is rubbed or scraped away. Sabouraud has recommended the use of a barium sulphide depilatory for the same purpose, and this is probably a quicker method. After the skin thickening has been reduced, Whitfield's ointment, either in normal or double strength, is applied as above. I have tried various other preparations—tinct. iodi, chrysarobin, mercurochrome-220 soluble, Castellani's fuchsine paint, and other preparations, but on the whole I am satisfied that Whitfield's ointment, if used conscientiously, is effective and less liable to cause complications than the other drugs. Whatever preparation is used, patience and systematic treatment is necessary to effect a cure. In those cases where a small crop of vesicles develop on the foot I have found painting with Castellani's paint gives good results. The small vesicles should be punctured and the paint applied night and morning. When the lesions are well I recommend three or four weeks' inunction with Whitfield's ointment.

It is important to remember that treatment must not be confined merely to the affected skin, but must be extended to the areas surrounding it. A. Strickler and W. H. McKeever (*Arch. Derm. and Syph*, April, 1934, p. 526) have shown fungus in the skin from one to two inches beyond the affected areas.

The Nails

The nails furnish us with a further problem. If these show clinical or microscopical evidence of involvement they should be dealt with. So great an authority as R. Sabouraud (*Med. Press and Circ.*, August 30th, 1933, p. 206) maintains that the only cure, when the whole nail is involved, is avulsion, followed by painting the nail-bed with 1 per cent. iodine in alcohol. Softening the nail with liquor potassae and scraping it away, afterwards applying antiseptics to the bed, can be used, but is more troublesome and less effective.

Recurrence

Having cured the clinical condition we still have to face the problem of recurrence. This may be due either to reinfection or to failure to kill the fungus in the skin in the first instance. Unfortunately, it is usually impossible to decide which it is ; even the most careful microscopical investigations are not infallible. Knowing, however, how extensive the infection may be, and having carried out as complete a treatment as is possible, it only remains for us to try to prevent reinfection from the patient's footwear. While the patient is under treatment boilable socks should be worn next to the skin, and should be boiled frequently. When the disease is apparently cured it is best to destroy all old socks, and even then a boilable slip should be worn under the sock while any treatment is going on. Boots and shoes present a greater difficulty: if they can also be scrapped so much the better, but economic considerations cannot be entirely ignored. Short of destruction, swabbing out the boots or shoes with 2 per cent. formalin appears to be the most useful method of dealing with them.

By these methods we endeavour to prevent fungus from again becoming lodged on the feet. Can we further strengthen our defence by the use of substances which hinder the growth of fungus on the skin? O. C. Levin and G. H. Silvers (*Arch. Derm. and Syph.*, September, 1932, p. 466) find that the sweat in the fourth interdigital spaces of the feet is less acid than normal, and they believe that this encourages the growth of fungus in this region, admittedly the most common site of infection by fungi on the feet. They find that by dusting between the toes talc powder containing 1 to 2 per cent. salicylic acid the normal acidity of the sweat can be restored. It is no trouble to anyone to dust some powder between the toes each morning, and this appears to be a very useful method of diminishing the liability to reinfection. It should be continued indefinitely.

Prophylaxis

We now turn to consider the question of prophylaxis as applied to the population as a whole. Prophylaxis of foot ringworm presents very great difficulties for several reasons. It is a very common affection. It is difficult to say how common it is, because a large number of sufferers from it are unaware that they have anything wrong. Even those who notice some scaling or cracking between the toes consider it a normal event. It is certainly very common in private practice, and by no means so uncommon in hospital work as one is sometimes led to suppose. Further, even when one has pointed out to patients that they have this infection in a mild form it is exceedingly difficult to induce them to carry out a prolonged treatment for a condition which causes them no inconvenience. It is also a difficult matter, for those of us who treat these cases habitually, to say with any certainty that we have effected a cure with the methods at present available, and so long as any uncertainty on this score exists in the minds of the profession it diminishes its power in demanding protracted treatment from the patient.

Our first object in prophylaxis should be to remove all sources of infection. I have said that we have to face two difficulties: the failure of the public to recognize mild cases, and the difficulty of obtaining a certain cure. As regards the first of these difficulties, I can see no hope of slight cases coming for treatment in our present state of society. It would necessitate compulsory medical examination of the whole population and the education of the medical profession to recognize the condition, a stage which it has not yet reached. Before such a state of affairs has arrived, however, we may hope that dermatologists can offer a more successful and rapid cure of the

condition. Though it may take some time for the millennium to arrive, a great deal might be done, and in some places is being done, to diminish the dissemination of the disease by systematic inspection and treatment. It is well known that the disease is specially liable to spread in communities such as public schools, universities, sanatoria, etc. In these places systematic examination of the feet and treatment might be much more completely carried out than it is at present.

Assuming, therefore, as we must, that there are always a number of infected persons amongst us, we now have to consider how infection of the non-infected can be prevented. It is probable that most fungus infection is picked up by the toes from the floors of bathrooms, swimming baths, changing rooms, etc.—in fact, any place where infected persons may stand with bare feet and so leave scales about. There are two main methods of prophylaxis available: first, by preventing the naked foot from coming into contact with the floor, either by wearing rubber shoes or by having separate bath mats for each person; and, secondly, by using some antiseptic after contact with a possibly infected floor. For hotels and private houses the use of separate towels and bath mats would probably go a long way towards preventing infection, while the employment of rubber shoes in swimming baths might well be made compulsory. In America this question has been studied very carefully by a number of observers.

To quote only one published paper: R. T. Legge, L. Bonar, and H. J. Templeton (*Journal of the American Medical Association*, July 20th, 1929, p. 170), examining the feet of 3,100 entrants to the University of California in one session, found 53.3 per cent. of the men and 15.3 per cent. of the women had foot ringworm. At the end of a year they again examined 1,000 of these men and 997 of the women who had access to the showers, swimming pools, and gymnasiums. Of these, 78.6 per cent. of the men and 17.3 per cent. of the women were found infected. The increase in the case of the men is striking. The authors point out that the women students occupied a gymnasium with every known sanitary device. The women students and attendants were obliged to wear rubber shoes, and in no circumstances were they permitted to walk with bare feet on the floors or runways leading to the swimming pools or gymnasiums. On the other hand, the men occupied an antiquated gymnasium, where, on account of the lack or non-use of bathing shoes, and inferior sanitary facilities, the students constantly walked on their bare feet and became infected.

With regard to the use of antiseptics in public bathing establishments, these have been tried with considerable success in America. W. L. Gould (*Journal of the American Medical Association*, October 18th, 1931, p. 1300) recommends baths of 10 to 15 per cent. sodium thiosulphate solution to be placed in such a way that all users of the baths must walk through them on their way to their dressing rooms. E. D. Osborne and B. S. Hitchcock (ibid., August 13th, 1931, p. 453) and E. D. Osborne, E. D. Putman, and R. J. Rickloff (ibid., November 1st, 1933) in the same way use 1 per cent. sodium hypochlorite. Both claim to have prevented any spread of the disease by these methods. Needless to add, the proper flooring, and cleaning of dormitory floors, bathrooms, swimming baths, etc., adds materially to a reduction in the risks of spreading infection.

Conclusion

To sum up, we are dealing with a very common affection which, though it does not terminate fatally, and therefore appear in the Registrar-General's returns, may cause a good deal of suffering and loss of work. Owing to its insidious onset a great number of cases escape detection, and, even when detected and treated, for various reasons do not get completely cured. We have to face the fact, therefore, that for the present there will be a large number of individuals infecting the floors of our private bathrooms, public bathing places, etc. I have pointed out that a good deal could be done to limit the spread of infection in such places, but in order to get such measures adopted on a large scale the public would have to be educated, and this can only be done through the medical profession, and the profession as a whole is still barely aware that the problem exists. Possibly the solution of the problem really rests with the dermatologist. I find myself very much in agreement with Weidman, who, in a discussion on the subject in America, made the following remarks:

"The hygiene of the problem is so complicated that I doubt whether the difficulty can be met by that route. It is impossible to sterilize all the wearing apparel of the patient; even so, there would still remain the floor coverings in our homes, hotels, shower baths, etc. It seems to me that the real approach to the millennium in the way of treatment is to establish conditions in the intertriginous locations in which the fungi work and mobilize, which will make these locations undesirable to the fungus."

May it not be that in this direction lies the solution of our problem?

MUCO-PURULENT TUBO-TYMPANIC INFECTIONS *

BY

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When the president suggested for this discussion the subject of tubo-tympanic infections I understand he had in mind its limitation to the class of ear case in which we have reason to believe that the anterior part of the tympanum is mainly involved—cases in which the perforation, if any, is present, is demonstrable, is anteriorly placed, and the discharge, if any, is predominantly mucoid or muco-purulent. We have to include also, of course, cases of low-grade infection in which perforation of the membrane does not occur, although from the appearances, the impairment of function, and the auscultatory signs on inflation we are able to presume the presence of secretion in this part of the middle ear. Further, the president suggested that we might include in the category those unsatisfactory cases exhibiting a continued or recurring muco-purulent discharge from the anterior part of the cavity after the radical mastoid operation.

We are not directly concerned on this occasion with the acute otitis media arising in the course of common colds, influenza, and the exanthemata, nor with chronic otitis media showing more or less destruction of the posterior part of the membrane with perhaps granulations or polypus. The differentiation cannot be very rigid, however, as many cases properly included may have begun as conditions indistinguishable from the cases we are excluding, and may be looked upon as residuals from the latter.

Why should a middle-ear infection spend its energies on the anterior part of the cavity in preference to the posterior, or (as may be the more correct form of the question for some cases) why should the infection of the anterior part of the cavity continue when it has subsided in the posterior part?

* Read in opening a discussion in the Section of Oto-rhino-laryngology at the Annual Meeting of the British Medical Association, Bournemouth, 1934.

Infection by Direct Spread or by Blood Stream

We are probably all agreed that in the great majority of cases infection reaches the tympanum by direct spread along the Eustachian tube, whose mucous membrane is continuous with that of the nasopharynx on the one hand and the middle ear on the other. The fact that otitis media most commonly arises as a complication of influenza or a common cold, or of those of the exanthemata which in their early stages attack the upper respiratory tract, seems to make such a conclusion incontrovertible. It is comparatively seldom that we do not get a history of sore throat or nasal catarrh antedating the onset of the middle-ear signs. In a large group of cases the Eustachian tube serves merely as an avenue of approach, its inflammatory condition passing off as quickly and completely as the nasopharyngitis which was its precursor. The distinguishing point of the group we are considering to-day is that the Eustachian tube remains prominently in the picture.

On the other hand, there seems to be some basis for the view that sometimes the infection in otitis media, and particularly in mastoiditis, may be blood-borne and quite independent of the Eustachian tube. Killian held that infection of the paranasal sinuses in scarlet fever is blood-borne, and if so why not the mastoiditis which is much more common in this disease? The middle-ear complications of typhoid fever, said to occur in 7 per cent. of cases, are likely to be blood-borne, as nasopharyngitis is not a feature of this disease.

Some observers from experimental work on animals have concluded that pneumonia may be a blood-borne infection, and not an extension down the mucosa of the bronchial tree. They found the pneumococci in the blood during the incubation period, but when consolidation had occurred in the lung the organisms were found to have migrated there and the blood stream was free of them. The hypothesis is that when the pneumococcus gains entrance, usually by the pharynx, the alveolar tissue of the lung, for which the toxins of this organism have an affinity, becomes sensitized. At the end of the incubation period the pneumococci migrate to the tissue thus prepared for them. Possibly the same may occur in influenza and the exanthemata, in which diseases we have abundant reason to suppose that the causative organisms have a special predilection for the mucosa of the middle-ear cleft.

A few months ago I had an opportunity of observing more closely than is usually possible the onset of the ear symptoms in an extremely severe epidemic of measles in a preparatory school, and some of the cases were very suggestive of a blood-borne infection. The inflammatory signs appeared first in the posterior-superior part of the membrane, while the lower part retained its lustre, even as far as not to have lost the light reflex. When, after a few hours or, at most, a day or two, the redness extended over the whole membrane, and myringotomy was performed, only a thin serous fluid escaped. The mastoid operation was necessary in most of the cases in which myringotomy was done, and although it was never delayed beyond two or three days, the advanced stage of the mastoid disintegration suggested that the mastoid infection had ante-dated rather than post-dated that of the middle ear. The medical officer of the school, indeed, suggested a blood stream infection of another kind. He went very carefully into the history of all the boys affected, and found that most of those who developed mastoiditis had been contacts of another boy whom he suspected of being a scarlet fever carrier. This boy actually had, during the measles epidemic, a recurrence of suppuration in a mastoid operated upon after scarlet fever eighteen months previously. The theory, in which the medical officer is supported by a distinguished bacteriologist to whom he presented the data, is that these boys contracted a streptococcal mastoiditis from a latent scarlet fever infection when their resistance was lowered by measles.

However, while recording the opinion that in some cases an acute middle-ear or mastoid infection may be blood-borne, I am not suggesting that in this fact we have the distinction between tubo-tympanic infections and those involving the posterior part of the cavity. Probably only a comparatively small number of cases of otitis media can be even suspected of being blood stream infections. The Eustachian tube must be looked upon as the usual pathway of infection.

Why, then, should the infection sometimes confine its energies to the anterior part of the cavity and at other times skip this, or pass lightly over it, and produce a more severe condition, often with bone involvement, in the posterior part?

Variation of Mucosa in the Middle Ear

The variations in the mucous membrane distributed over the walls of the tympanum may provide part of the explanation. In the anterior part of the floor of the cavity and on its anterior wall where the Eustachian tube enters, the lining is of ciliated cylindrical epithelium. Over the promontory it is cuboidal-celled, and over the attic squamous-celled, this type being continued through the aditus into the mastoid antrum and further cells.

We know that particular organismal types show a predilection for one type of epithelium over another, so that the question whether an ear infection is to become a posterior and mastoid infection rather than one confined to the anterior part of the tympanum may depend on the particular organism involved. I have not been able to trace any bacteriological research into the types of organism predominantly found associated with anterior perforations—obviously the flora is likely to be very mixed by the time a case comes under observation—but it is well known that in the acute cases affecting the posterior part of the cavity and going on to mastoid operation, one or other of the many types of streptococcus is most commonly involved. We also know from clinical experience that the streptococcus is much more liable to attack the squamous epithelium of the pharynx than the ciliated epithelium of the nose. We are not surprised, therefore, to find it selecting for attack that part of the middle-ear cleft which is lined by squamous epithelium.

Degree of Virulence of Organism

There is also the question whether the degree of virulence of the organism, whatever its type, may determine the site of its action, or its maximum action, in the middle ear. Influenza varies enormously in its virulence in different epidemics, although presumably the same organism is always involved. In the milder epidemics just as we have fewer sinus suppurations complicating the nasal symptoms, so also in the ear we have the milder anterior type of otitis media predominating over the posterior more severe type. During the winter of 1925–6 we had, in my area, two distinct visitations of this disease, one in December and the other in March. The former was mild, and of the myringotomies I personally performed only 1 in 10 required the mastoid operation. In the later epidemic, which was a severe one in all respects, one-third of the myringotomies were followed by mastoidectomy.

We have the same variations in the virulence of other epidemic diseases. I looked up my old copy of Osler and Macrae's *System of Medicine* of twenty-five years ago and found the ear complications of measles thus described:

"An acute catarrh of the middle ear is not infrequent from extension of the inflammation in the nasopharynx along the Eustachian tube. It may cause earache, slight deafness, or tinnitus. Occasionally the inflammation becomes purulent and the ear drums rupture. Mastoid abscess rarely complicates the middle-ear disease."

If this represents the incidence of ear symptoms in measles in America at that period, the disease in this country at the same time must have been more fruitful of such complications, as a large proportion of the chronic otitis media cases we see among young adults and people of early middle age are stated to date from measles in childhood. Then in still greater contrast we have the recent very severe epidemic which occurred in several parts of this country with an unusually high incidence of mastoid complications. In the small school epidemic I have already referred to the ears were affected in nearly 50 per cent. of cases, and of the affected ears nearly 50 per cent. required the mastoid operation.

There seems, therefore, to be some ground for thinking that the degree of virulence of an infection may determine the question whether one part or another of the tympanum is more likely to be affected.

Changes in the Floor of Middle Ear

There is also the question whether, owing to the dependent position of the floor of the middle ear, changes ulcerative or otherwise may occur in the mucosa, tending to chronicity. An analogy is to be found in the anterior inner angle of the maxillary antrum, where the mucosa is so frequently polypoid and unhealthy to a degree greatly in excess of any changes present in other parts of the cavity.

Professor Nager holds the view that the anterior perforation with mucoid discharge frequently indicates a tuberculous ulceration of the mucosa, and that this is often proved by the history, by von Pirquet's reaction, and by the presence of the scars of broken-down glands.

The Eustachian Tube

Then we have to reckon with the possibility of pathological changes in the Eustachian tube itself, keeping up an infective discharge from it into the middle ear—the so-called tuborrhoea. The Eustachian tube consists of three parts—a short upper end enclosed in a bony canal, a longer lower end in a cartilaginous funnel, and, between, a short isthmus, supported only by fibrous tissue. In this middle part the walls of the tube are in contact except when, by the act of swallowing, air is forced up the tube into the tympanum. Theoretically, after an acute inflammation of the tube, ulceration and consequent adhesions in this area might produce a condition analogous to stricture of the urethra and gleet, and it is possible that some of the rare cases in which inflation of the ear through the tube cannot be achieved may be so explained. What is still more likely to occur is that after an inflammatory condition in the tube has been established for some time the epithelium loses its cilia, as happens in similar circumstances in the nose and nasal sinuses, and this is probably the explanation of the persistence of tuborrhoea in those disappointing cases which resist treatment in every form.

The Nasopharynx

I am strongly of the opinion, however, that most frequently the determining cause of tubo-tympanic infections is not to be found in the particular organism concerned, nor in its degree of virulence, nor yet in any chronic or permanent change in the mucosa of the floor of the middle ear or of the tube, but in some pathological condition beyond the lower limit of the tube. The original cause and, in most cases, the continuing cause of an unhealthy Eustachian tube is to be looked for in its adnexa—the nasopharynx, the nose, or the paranasal sinuses—and it is mainly there we have to direct our attention with a view to the cure and the prevention of the condition we are discussing to-day.

The Question of Adenoids

As far as children are concerned—and the bulk of our cases of tubo-tympanic infections occur in children—sepsis and hypertrophy of the adenoid tissue of the nasopharynx take first place. It might almost be called the Golden Rule of Otology that in every case of ear discharge or catarrhal deafness in children the question of adenoids must be investigated, and yet one is constantly seeing cases in which the rule has been forgotten over a long period of local treatment.

I have described, in a communication read elsewhere, how when I started an aural clinic in connexion with a school medical service eight years ago I had at first to deal with scores of cases which had attended for local treatment of the ears for long periods, sometimes for years, and which cleared up in two weeks or less after removal of adenoids. No doubt everyone present has had a similar experience, and is finding it still repeated, although, happily, in diminishing degree.

The question of the presence or absence of adenoids should be settled in every case—without qualification. It is not sufficient to accept the mother's statement that there is no snoring or mouth breathing. Nor must we be satisfied with an assurance that the tonsils and adenoids have been removed—not even if we have done the operation ourselves. Even if inspection of the pharynx shows that the tonsils have been completely enucleated we have no right to assume, without an adequate view in the mirror, or, failing that, palpation with the finger, that the nasopharynx is equally free from excess of lymphoid tissue. Many operators seem to be more careful about the efficiency of the tonsil part of the operation than about the complete removal of the adenoids, and do not trouble to finish up with the finger after the curette, to make sure that everything has been removed, especially in the region of the Eustachian orifices and the choanal entrances. Apart from this, no one can guarantee that adenoids will not recur even after efficient removal. In the case of the tonsils, if we remove the capsules completely we can promise that they will not grow again, but we can give no such guarantee as regards adenoids, of which we merely scrape away the excrescence. It is true that recurrence after complete removal does not often take place, and that when any considerable mass of adenoids is found after a previous operation, examination of it generally proves it to be virgin tissue which has obviously escaped the curette before. It is not uncommon, however, to find an overgrowth of unhealthy granulations in the adenoid area—and the child with a chronic or recurring ear discharge cannot afford to harbour anything unhealthy in the vicinity of the Eustachian tube.

With a view to the *prevention* of a chronic tubo-tympanic infection it is equally necessary to keep this question of adenoids prominently before us in every case of *acute* otitis media. To embark on the local treatment of an acute ear which has spontaneously ruptured, or to do a myringotomy or mastoid operation where such is indicated, without making sure whether or not the nasopharynx is free from the sepsis or obstruction of adenoid tissue, is not giving our work the best conditions for success.

I have made it a rule for some years that every case of acute mastoiditis admitted to the children's ward must have adenoids removed a week or so after the emergency operation if any adenoids at all are present. If on examination before the mastoid operation the tonsils are found to be healthy or to have been removed, it is a good plan to palpate the nasopharynx at the close of the mastoid operation. If adenoids are present they can be scraped away there and then without adding

appreciably to the patient's discomfort. If, however, the tonsils also require removal, the combined tonsil and adenoid operation should be done within a week, so that the length of stay in hospital is scarcely prolonged. The same applies to cases admitted for myringotomy—adenoids alone may be removed when the myringotomy is done, or the complete tonsil and adenoid operation is done a week later if the tonsils also require removal. I believe that by this procedure cases of prolonged discharge after the mastoid operation or after myringotomy are reduced to a minimum.

Before leaving the question of adenoids perhaps a word should be said about the part the tonsils may play in keeping up a Eustachian tube catarrh. It is admittedly a very minor role compared with that of adenoid growths, but it is obvious that the proximity is close enough to demand consideration. Unhealthy tonsils must predispose to a nasopharyngitis, and so to the enlargement of adenoids or the growth of granulations where adenoids have already been removed. One generally finds in young people that with imperfectly removed tonsils adenoids or granulations are also present. This may, of course, only mean that the adenoid removal has been as badly done as the tonsillectomy, but it may also mean that recurring inflammation in the tonsil stumps leads to hypertrophy in the upper part of Waldeyer's ring. On the whole, I think on these grounds it is better to remove unhealthy tonsils in tubo-tympanic infections.

Relevant Intranasal Conditions

Let us now consider conditions in the nose itself which may cause or predispose to Eustachian tube infections.

1. *Foreign bodies* may cause a persistent rhinitis. Some time ago I saw a boy of 9 years with a history of recurring otorrhoea since babyhood. Conservative measures seemed to be successful for short periods, and particularly encouraging for a time after the removal of tonsils and adenoids, but recurrence always took place. I found a bead in the middle meatus of one side of the nose, and after its removal the ear quickly dried up. As a boy of 9 is not likely to put a bead in his nose, we presumed that the foreign body had been there as long as the ear discharge had lasted.

2. *Nasal obstruction* interferes with the efficient ventilation of the Eustachian tubes, and so predisposes to tubal catarrh. The most common cause of such obstruction in adults is a deviation or spur of the septum. In addition to blocking the airway, indeed sometimes without much blocking at all, this gives rise to a post-nasal phlegm, which trickles back over the spur and collects in the nasopharynx. The spur or knuckle causes contact of surfaces which should not be in contact, and produces a kind of nasal intertrigo with irritation of the mucous glands. In a case of tubo-tympanic infection the examination of the nose should be conducted with thoroughness. Cocaine and adrenaline should be applied in every case, as the spur is frequently situated far back and not visible to a casual examination without shrinking of the mucosa. We shall, in any case, probably want to test the patency of the Eustachian tube with the catheter, and the preparation with cocaine will not come amiss for that procedure. A septal deformity is so easily corrected that if we conclude that it has a bearing on the case there can be no excuse in most cases for leaving it untreated. Palliative measures are unsatisfactory. The operation can be done with local anaesthesia, with or without a previous medication sufficient to put the patient to sleep. A mucilage of cocaine with adrenaline added is painted carefully over every part of the septum on both sides, and the sphenopalatine ganglion is blocked by the application of a single drop of 90 per cent. cocaine held against the ganglion for one minute on a cotton-wool mop. This should be done just before commencing the operation, when the localizing effect of the adrenaline already applied prevents absorption of the strong solution of cocaine. The operation is then practically bloodless, and if we discard post-operative plugs and merely paint the wound and the septal mucosa with Whitehead's varnish, discomfort is reduced to a minimum.

3. *Nasal polypi*, besides being a frequent cause of nasal obstruction and interfering with the due ventilation of the Eustachian tube in the same way as do septal spurs, have an added danger in so far as they are always associated with some degree of sepsis in the ethmoid or other paranasal cells. The discharge bathing the nasopharynx is therefore more pathogenic than the phlegm associated with septal deformity. In the kind of ear case we are considering nasal polypi should always be removed, and an attempt made to eradicate the sepsis from which they arise.

Sinusitis

Apart from the obstruction caused by polypi, any of the paranasal sinuses may by its being the seat of suppuration—that is, without polypus formation—cause or keep up an infective condition in the Eustachian tube. I have recently given more attention than I had previously done to this relationship, and have found so many cases in which the antrum of Highmore especially was infected, not only in cases of recurring ear discharge, but in acute cases demanding myringotomy, that I have come to the conclusion that no examination of an inflammatory ear, either acute or chronic, is complete unless it includes the most thorough investigation of the nasal sinuses. Transillumination is admittedly unreliable and should be depended upon only if it yields on both sides an equally bright infra-orbital crescent and pupil illumination, and if there is no suggestion of pus or bogginess in the middle meatus. If there is the slightest doubt *x*-ray examination or exploration should be resorted to. I have several times in recent months when called to do a myringotomy on an acute ear found an antrum opaque on transillumination, and have washed out pus from it under general anaesthesia after doing the myringotomy. If, after inserting the trocar, the patient is placed so that the face is turned three-quarters downwards over the edge of the table there is no danger of fluid passing into the trachea. Such acute cases do not properly come into our discussion to-day, but are admissible from the point of view of prevention, as it is extremely likely that a large proportion of them would not clear up after myringotomy, but would drift into the class of tubo-tympanic catarrh if the nasal sinus were left untreated.

Further Points in Treatment

I quite expect that some will disagree with me over this question of treating an infected antrum in an adult or removing adenoids in a child at the same time as the operation for myringotomy. I make no point of it, but I find it works. The essential point is not to miss anything in the nose or nasopharynx which may be either an exciting or a predisposing cause of the ear condition, and to make sure that it is effectively treated in good time so as not to prejudice our direct treatment of the ear. Septal deflections, polypi, and ethmoid or frontal sinus conditions should be treated as soon as the acute condition in the ear has been relieved.

We must not allow ourselves to be hesitant at doing less than restoring the environs of the Eustachian tube to a condition as near to the ideal as surgical measures or other treatment will achieve. We may have prejudices to overcome, as the patient—and sometimes the practitioner—may not appreciate the connexion, but it is our business to educate them. It has taken almost a genera-

tion to teach the public the relation between adenoids and ear suppurations. It may take as long to convince people that anything at all interfering with the proper ventilation or asepsis of the Eustachian orifices is of scarcely less importance.

Special mention should now be made of the less frequent case in which the middle-ear infection is so mild that rupture of the tympanic membrane does not occur and the changes visible in it are not such as seem, judging by the ordinary standards, to demand myringotomy. The subjective signs may be a feeling of fullness or wooliness in the ear with a greater or less degree of deafness, and perhaps crackling noises. Pain is not severe and may be absent altogether. On objective examination the tympanic membrane may be a dull red or only lustreless. Bone conduction may be greater than air conduction, but only if the deafness is of considerable degree. Diagnostic inflation, by the catheter with the aid of the otoscopic tube, is our most reliable guide, and may reveal some blocking of the Eustachian tube and some whistling rales suggestive of moisture in the tube, or finer bubbling rales indicative of fluid in the tympanum, or both kinds of rales may be heard. There is nothing in the condition at first to distinguish it from a mild catarrhal otitis media, such as might pass off in a few days without treatment, but in spite of inhalations and repeated inflation it persists. Probably most of us have occasionally watched these cases for weeks. I think we should intervene earlier—doing a myringotomy under strict aseptic precautions and inflating by the catheter immediately afterwards to expel through the incision the thick mucoid discharge. The patient will, in most cases, be able to continue the expulsion by Valsalva's method. I shall quote only two cases as examples.

H. W., a male aged 57, had had ticking and singing noises in the right ear for one month; the membrane was injected and lustreless, bone conduction was increased, and a whisper was not heard close up. Bubbling noises were heard on inflation, using the otoscope. Inhalations and catheterization were employed for five weeks without appreciable improvement. Myringotomy was then performed, and while he was still under the anaesthetic the Eustachian tube was catheterized. Sticky muco-pus was ejected, and on mopping appeared like a glistening bead on the cotton-wool. The ear was kept clean by boric acid in spirit and the opening remained patent for twelve days, the blow-through sounding dry for a few days before closure. By that time a whisper was heard at 12 inches, but it took two months for complete restoration of hearing. I am of the opinion that had myringotomy been done two or three weeks earlier recovery of hearing would have been more rapid. In this case a marked deflection of the septum was the probable predisposing cause, but in view of his age I did not suggest operation. In this class of case, however, as in the frankly suppurative cases, any abnormal condition in the nose or nasopharynx should be attended to.

The second patient was a female, aged 60. The right ear had been completely deaf for many years, the tuning-fork tests indicating a nerve deafness. Recently the left ear had also become quite deaf, following on a complete blocking of the nose, from what her medical adviser took to be an allergic condition. The membrane was lustreless but not bulging, bone conduction was increased, and a whisper was not heard close up. Both antra were dim on transillumination and yielded copious pus on lavage. Inflation of the left Eustachian tube revealed bubbling after initial blocking was overcome, and the hearing was greatly improved. After lavage had been repeated five times the nasal airways were good and the hearing restored to normal, but the antra still yielded some pus. There could be no question in this case about the connexion between the antral suppuration and the tubo-tympanic catarrh.

It remains to me to refer to the question of tuborrhoea after the radical mastoid operation. Even in the hands of the best operators a certain proportion of operations fail to achieve complete cessation of the discharge, and it is generally the anterior end of the cavity that is at fault. As a rule, on inflation by Valsalva's method, muco-pus appears at the Eustachian tube end, indicating that, despite all our care in curetting or cauterizing, nature has not favoured us with complete atresia of the upper end of the tube. The operation is not a failure, but it may appear to the patient as such. We are satisfied that we have excavated the cells of the danger area and put the patient in a position of safety, but he was probably more concerned about the annoying discharge, and this continues.

In these cases also, may it not sometimes be the other end of the Eustachian tube we have neglected? Every case of chronic otorrhoea should be carefully studied from every point of view before the mastoid operation is undertaken, and if there is anything in the nose or nasopharynx which might interfere with the health of the Eustachian tube correction of this should be included in the scheme of treatment. If the case is not urgent, I begin with the minor conditions while instituting careful intensive local treatment of the ear, and one is quite frequently surprised to find that the mastoid operation is not required although long periods of local treatment have hitherto been unsuccessful, the case thus proving to be mainly a tubo-tympanic infection when it had all the appearances of a chronic mastoiditis. If the discharge does not dry up we go on to the mastoid operation with confidence that everything is in as good train as may be for a satisfactory outcome. In the numerous cases in which pain, pyrexia, or other signs indicate the need for an immediate mastoid operation, the unhealthy condition in the nose or nasopharynx should be rectified as soon as the patient is fit. Here again, as in the cases referred to earlier, the length of stay in hospital is not prolonged if the minor operations are timed to take place about a week after the mastoidectomy.

Concluding Remarks

In conclusion, I do not wish to seem to minimize the importance of the local treatment of the ear—this must be assiduous as long as may be necessary. I favour the dry treatment as a rule, doing intratympanic irrigation or meatal syringing only as often as is required for removal of debris. After each irrigation the middle ear and meatus should be completely dried by successive mops, aided by catheterization or Valsalva's method. The meatus is then filled with dry boric powder or with the powder suspended in spirit. Nor do I belittle the help that some claim to get from intratubal treatment, but I think the centre of gravity lies at the other end of the Eustachian tube, and that the nasopharynx, with its adjacent cavities, should be explored in every case of tubo-tympanic infection.

In its latest publication, *Standard Code of Industrial Hygiene*, the International Labour Office turns its attention to the lot of workers employed in factories, workshops, etc., who, without incurring specific risks, are nevertheless exposed to the dangers resulting from unhygienic working conditions. There are forty-six clauses in the *Code* covering all matters affecting the health of workers in premises at and above ground level, workrooms below ground level, work under shelters, pent-houses, etc., and unhealthy or offensive trades. It is not intended that the *Code* should serve as a standard system of regulations for general adoption, but rather as a guide for those concerned with the health of the industrial worker. The pamphlet may be obtained from the publishers, P. S. King and Son, Ltd., Orchard House, Westminster, S.W.1, price 1s. 6d.

ELECTRO-COAGULATION OF THE PROSTATE

IMMEDIATE AND LATE RESULTS

BY

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Perurethral methods of treating prostatic obstruction, though still in their period of trial, are undoubtedly finding a place in the field of surgical therapeutics. I feel, therefore, that a report on a short series of cases, most of which were operated on over five years ago, is of interest, and particularly so from the point of view of later results. The method of operating used in this series is one that I evolved as a result of experimental work in 1926, and first put into use in February, 1927.

The technique is described in the *British Medical Journal* of December 8th, 1928, and what I am writing now is supplementary to what I then wrote.

Technique

Briefly, the technique entails the use of two instruments (Fig. 1):

1. *The Diathermy Catheter*, with a coudé bend and a small metal tip, which can be activated from a diathermy machine. It is used for filling and emptying the bladder and for coagulating the tissue that is causing obstruction of the vesical orifice. The manipulation of this instrument is controlled by vision through:

2. *The Suprapubic Cystoscope or Prostatoscope*.—This latter instrument is introduced into the bladder by suprapubic puncture. Through it a clear view is obtained in one field and from above of the whole vesical orifice and its surrounding abnormalities (Figs. 2 to 5).

FIG. 1.—The cystoscope should have been shown as entering the bladder nearer the pubic symphysis and in a vertical direction.

By the combined use of these instruments any obstruction that may be encroaching on the vesical orifice can be clearly visualized and coagulated with selective precision. Since the technique was first introduced I have made two modifications:

1. The original diathermy catheter was insulated with a cover of boilable lacquer. This insulation was found to be inadequate. The minutest crack in the lacquer allowed the current to leak and cause a burn of the urethra. I have had two cases of papilloma of the bladder in which the technique described above was being used, where the urethra was burnt in this way—one slight, and the other extensive and serious. The risk of this occurring has now been eliminated by covering the lacquer with a thin metal sheath. This serves the double purpose of protecting the lacquer, and, should a leak occur, the whole length of the instrument becomes warmed, and no damage is caused to the urethra.

2. Before withdrawing the sheath of the suprapubic cystoscope a piece of rubber tubing is passed through it into the bladder for drainage. This is a valuable modification of the technique, for it acts as a safety valve should the catheter become blocked; it lessens the risk of pre-vesical cellulitis; it provides an effective way of irrigating the bladder for as long as is necessary after the operation, and helps very materially to combat the effect of sepsis. The fistula will close in two to four days after the removal of the tube.

Choice of Cases

All cases with undoubted and persistent symptoms of prostatic obstruction, in which on rectal examination the prostate was large, smooth, and movable, and in which the clinical condition and renal functions were satisfactory, have been submitted to suprapubic prostatectomy. The remainder, provided they were not obviously moribund, were treated by electro-coagulation.

It will thus be realized that the technique has been put to a severe test, and this should be taken into account in assessing its value as judged by results. The ages of the patients have varied from 50 to 84 years, and the duration of symptoms from two months to ten years. Frequency was present in all the cases, and eighteen had varying degrees of incontinence. No fewer than twenty-five cases had retention of urine on admission to hospital. This high figure is accounted for by the fact that many of the cases were admitted as emergencies into a Poor Law hospital, where the proportion of such cases is high as compared with those with less acute symptoms.

Physical Examination

The usual general survey of the patient was made. In the selection of suitable cases for electro-coagulation rectal examination is of the utmost importance. Those cases with marked enlargement and prominent bulging into the rectum are best treated by prostatectomy. Cases suitable for electro-coagulation are those where the prostate is only slightly enlarged, those where the enlargement is chiefly in an upward direction, and those in which the prostate is smaller than normal.

In this series twenty-one were noted as being larger than normal, eleven as being smaller than normal, and the remainder normal. Residual urine varied from two ounces to complete retention. Pyuria was present in nineteen cases. The blood urea was estimated in all the cases except seven.

The results are shown in the following table:

Blood urea in mg. per 100 c.cm.	30–29	40–49	50–59	60–69	70–79	80–89	90–99	Over 100
No. of cases	8	5	11	3	2	2	3	1

Perurethral Cystoscopy

Wherever the diagnosis of prostatic obstruction was reasonably clear cystoscopy was not carried out. In the main the cases that did not require this examination were those with definite enlargements and those that had been admitted with retention and had been relieved by catheter. In cases where the symptoms had some atypical features, and where the prostate, on rectal examination, was small, cystoscopy was as a rule carried out. The type of cystoscope used was one allowing of prismatic and direct vision.

A general survey of the bladder and trigone was made. Trabeculation was particularly looked for, and calculus and tumour were excluded. Attention was now directed to the prostate itself, and any gross finding noted. The experimental practice of plotting out a series of cystoscopic fields, and from these making a composite picture, was given up early in the series, for it was found that the information obtained was not worth the trouble it entailed and the extra intraurethral manipulation that the investigation involved. Before withdrawing the sheath of the cystoscope a direct-vision telescope was inserted, and as the instrument was withdrawn the contour of the vesical orifice and the encroachments on the prostatic urethra were noted. These observations were of considerable value in the small or slightly enlarged prostate, and gave definite evidence as to the portion of the vesical rim that was causing the obstruction and required coagulating. I found it impossible to estimate with any degree of accuracy the size of the prostate by perurethral methods, and much more dependable information on this point was obtained by rectal examination and by using the suprapubic cystoscope.

In brief, the value of perurethral cystoscopy and urethroscopy, where this technique is used, is to show that there is no obstruction in the urethra other than in the prostatic portion and at the vesical orifice, to exclude other conditions of the bladder that might account for the symptoms, and to ascertain if there is trabeculation of the bladder as indicating obstruction of the urinary outflow. It may be taken as an axiom that if there is trabeculation of the bladder and no stricture of the urethra, there is obstruction at the vesical orifice, however unconvincing the signs may be from perurethral cystoscopy and examination of the prostate itself.

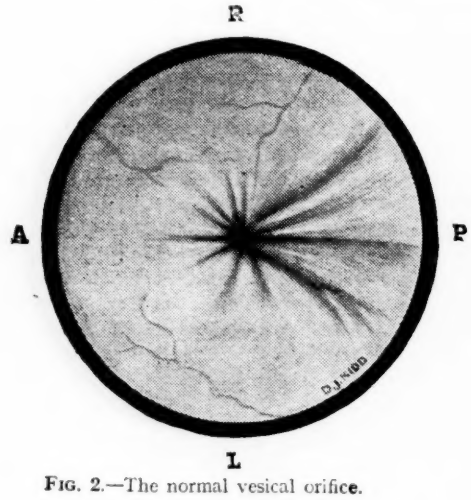

FIG. 2.—The normal vesical orifice.

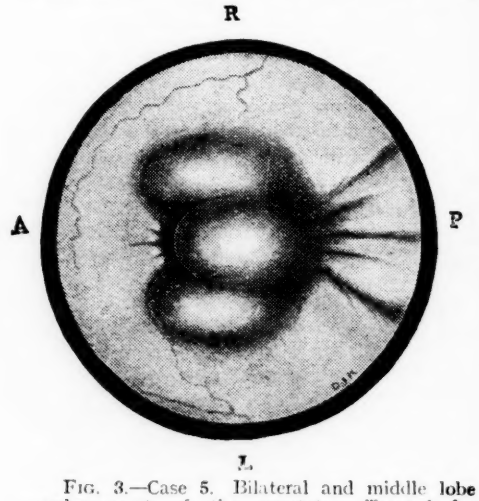

FIG. 3.—Case 5. Bilateral and middle lobe enlargement of the prostate. Treated by electro-coagulation. Normal relief.

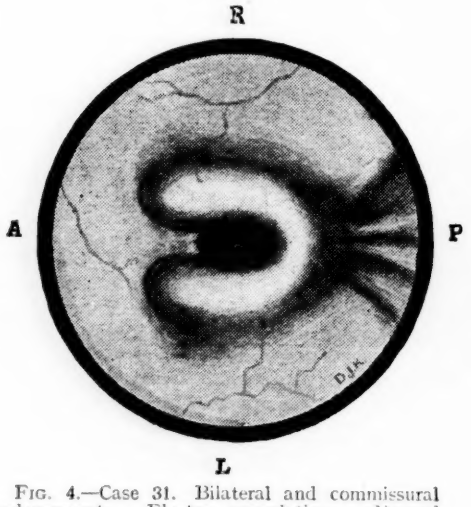

FIG. 4.—Case 31. Bilateral and commissural enlargement. Electro-coagulation. Normal relief.

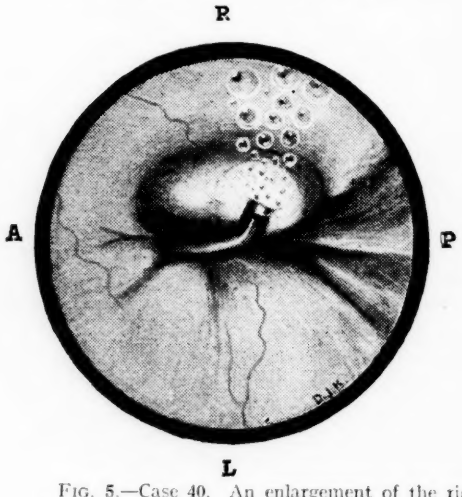

FIG. 5.—Case 40. An enlargement of the right lateral lobe being coagulated. Normal relief.

Immediate Results

The convalescence of these cases has in the main been uneventful and free from anxiety. While the suprapubic drainage tube and the catheter drained the bladder the patients were comparatively comfortable. After these had been removed, and up to the end of the third week after operation, they complained of varying degrees of bladder irritability—frequency, precipitant micturition,

and dysuria. During this period the sloughs are separating, and as a rule they come away in small fragments and are passed per urethram without any difficulty. There has been a remarkable absence of haemorrhage, which is a striking contrast to what occurs in the resection and punch operations. In no case has there been primary haemorrhage. Trivial secondary haemorrhage occurred in three cases; in none of these did it last more than forty-eight hours, and it ceased entirely after the passage of fragments of slough.

Incontinence occurred in six cases. In all of them it was temporary. In one case the cessation of the incontinence coincided with the passage of a medium-sized slough. Inflammation round the vesical orifice and consequent dysuria is to be expected after treatment by per-urethral methods. In ten cases it was more marked than usual, and lasted for varying periods up to three months. Epididymitis occurred four times—bilateral in one and unilateral in three instances. The inflammation cleared up in all cases with expectant treatment. In seven cases large sloughs formed, giving rise either to difficulty in micturition or to temporary retention. In five of these the slough was passed naturally, with great relief to the patient. In one case it was evacuated by means of a Bigelow's evacuator, and in the remaining case it was removed in the jaws of a small lithotrite after being crushed, the procedure being controlled by means of the suprapubic cystoscope.

Prevesical suppuration occurred in two cases. The first was the tenth of the series. The suppuration was extensive, and a suprapubic incision had to be made to evacuate a large quantity of pus. All cases after this one have had a tube inserted into the bladder, and only one case of this complication in a mild form has occurred since.

Remote Results

All the cases that are here reported were operated on during the five years 1927–31. In twenty-nine cases it is more than five years since the operation, and in the remaining thirteen from two to five years. The following table gives an analysis of the results.

Normal relief	50	per cent.
Partial or temporary relief ...	22.2	,, ,,
No relief	11.1	,, ,,
Died...	16.6	,, ,,

Not traced: 6 cases.

For the purpose of this classification "normal relief" means that the patient passes his urine in a good stream, has no frequency and no dribbling, and does not get up to micturate more than once in the night. This is a very high standard of relief, and were it lowered a little the number in this category would be considerably higher.

Partial Relief

In this group six cases derived very considerable relief from the operation, but could not be classified under "normal relief" because frequency, though diminished, was still present. The following two had marked relief for a period, and then the symptoms returned.

Case 32.—Kept well for two years, when symptoms began to return. X-ray investigations showed stone in the lower end of the left ureter and a medium-sized stone in the bladder. Three months after return of symptoms the patient was operated on elsewhere. The left ureter was opened and the stone pushed into the bladder, which was then opened, the stones being removed and the prostate enucleated piecemeal with difficulty; the patient died on the fourth day after the operation.

Case 35.—Had marked relief for three years; then his symptoms began to return. Three and a half years after the electro-coagulation a suprapubic prostatectomy was carried out elsewhere. There was no difficulty in enucleating the prostate. The patient died the sixth day after the operation.

Unrelieved Cases

Three examples of this group are given below.

Case 14 was 84 years of age, and in a very feeble condition. Electro-coagulation gave him slight relief, but he returned in fifteen months with retention of urine. No further operation was done, but he improved after being catheterized for a few days. Twelve months later he "died of old age."

Case 16.—Had had frequency and incontinence for ten years before admission. The incontinence continued in spite of two electro-coagulation operations, one eleven months after the other.

Case 34.—Had two friable stones removed by litholapaxy at the same time as the electro-coagulation. He was readmitted twelve months later with a recurrence of symptoms, when prostatectomy was carried out and another stone in the bladder removed. He died three months later.

Causes of Death

There were six deaths in the series.

Case 6.—Was admitted with clinical signs of uraemia. He had a large prostate with bilateral and commissural enlargement. Blood urea, 75 mg. per 100 c.cm. During the fourth week after the operation his blood urea was up to 180 mg. per 100 c.cm., and he died of uraemia. (This was an early case in the series, and my enthusiasm rather warped my judgement. This patient should not have been operated on, as his trouble was too far advanced.)

Case 19.—Ten days after operation this patient passed urine freely and had no residual; could hold urine for five hours. Nine weeks after operation he had repeated attacks of epistaxis, from which he died a week later.

Case 21.—This patient was 80 years of age, and had suffered from diabetes for several years and haematuria for three months. His blood sugar was 333 mg. per 100 c.cm., and his blood urea 52 mg. per 100 c.cm. The blood urea went up to 85 mg. per 100 c.cm. on the seventh day after the operation, and on the eighth day he became comatose and died.

Case 26.—Had marked cystitis at the time of diathermy and twelve small vesical calculi, none of which was larger than a small pea. He died on the third day after operation, and the post-mortem examination showed an ascending pyelonephritis.

Case 28.—Admitted with retention of urine and a history of having had incontinence for six months. A small adenoma growing from the right side and filling the vesical orifice was destroyed. His convalescence was normal. On the eleventh day he was emptying the bladder completely without any difficulty. During the fifth week after the operation he became insane, and had to be transferred to a mental ward, where he subsequently died.

Case 29.—Admitted with chronic myocarditis, cystitis, and incontinence of urine. Electro-coagulation of left lobe was done. He had marked cystitis, which began to improve after the eighth day. It never completely cleared up. His cardiac condition became worse, and he died on the thirty-seventh day after the operation.

These cases illustrate in a striking manner what bad risks many of the patients in this series were. Case 26 was the only death that was directly attributable to the operation. In the light of subsequent experience I do not think this patient was suitable for treatment by this technique. A cystotomy was the only procedure that was feasible in his case. It seems unreasonable to blame the technique for the death of Case 21.

Untraced Cases

The untraced cases call for no comment. The immediate results were no better or no worse than the average, and there is no reason to think that had it been possible to trace them they would have materially affected the statistics.

Summary

1. By means of the technique described above the whole of the vesical orifice and its immediate surroundings can be seen in one field, and any tissue obstructing the orifice can be destroyed with selective precision.

2. The method has been put to a very severe test, inasmuch as all cases that were not suitable, or were in too bad a condition, for suprapubic prostatectomy were, provided they were not moribund, treated by it.

3. The immediate and remote complications and results are described.

4. Normal relief was obtained in 50 per cent. of the cases, and this standard of relief has been maintained for over five years. By using a little discrimination in the selection of cases, and with increasing experience, the proportion of cases enjoying normal relief would probably exceed 80 per cent.

5. The death rate directly attributable to operation by this technique is very low, even when the worst possible risks are dealt with. By eliminating the very bad risks it can probably be reduced to less than 1 per cent.

RESIDUAL INFECTION OF THE JAWS

BY

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"Residual infection" is a term employed in dental surgery to describe an obscure and indefinite condition occasionally met with in edentulous mouths, or in areas from which teeth have been removed. The condition has recently aroused much interest, but as yet the bone pathology has received little attention. It is proposed in this paper to review the pathology, aetiology, and treatment of residual infection with reference to cases which have come under the writer's personal observation.

The Condition Described

Clinically, a case of residual infection presents certain definite features. The patient is unwell himself, and has the appearance of a mild toxaemia; he is easily tired, and finds difficulty in concentrating his attention on any one subject for a prolonged period. When the upper jaw is affected antral disease is frequently present, and rheumatic pains and digestive disturbances are common. On examination the mucous membrane covering the affected ridges is found to be red and inflamed, and a number of pin-point ulcers, white in colour, are sometimes noted. The area is tender and the underlying bone may be rough, especially in the lower incisor region. The *x*-ray appearance is difficult to describe. In the lower incisor region the appearance may be that of an excrescence, while in the upper jaw the usual appearance is one of ill definition of the bony trabeculations.

The final diagnosis is made by culturing organisms taken from the affected region by means of a small round-headed dental burr, which is dropped into a broth tube. Cultures from positive cases are generally pure, and the infection is most frequently streptococcal in nature.

These patients have usually had very badly infected teeth, which have been removed by forceps. The infected bone has not been removed, and, because of poor resistance on the part of the patient, or as a result of some other factor, resolution of the alveolar bone does not take place, and the condition of chronic infection becomes established.

Treatment

The condition requires treatment not only of the local symptoms, but also of the general debility. Medical diathermy has been recommended, but in the writer's experience it does not produce a permanent cure. Operative treatment can be very satisfactory if it is thorough, but the mere removal of any bony excrescence is not sufficient. This may relieve dental discomfort, but will not benefit the patient's general health. It is essential to remove as much as possible of the septic bone, while maintaining the shape of the alveolar ridge to assist in the subsequent fitting of dentures. When there is widespread infection of bone the operation may be done in several stages, using a local anaesthetic. It may, however, be more satisfactory to give an intratracheal anaesthetic.

A horizontal incision is made in the muco-periosteum on the outer side of the ridge, approximately midway between the crest and the sulcus, and the muco-periosteum is reflected from the ridge and held aside. With a sharp chisel the outer compact layer of bone is pierced, giving access to the cancellous portion. The soft bone lying between the outer and inner alveolar plate is curetted away and the resulting cavity swabbed out with acriflavine in normal saline (1 in 1,000). The area is then packed with acriflavine in glycerin for a period of five minutes. This produces a hyperaemia, and, in consequence, the tissues are thoroughly flushed out. All sharp edges of bone are trimmed off and the soft tissues carefully sutured in place.

Post-operative treatment consists of rest for several days after the operation. A mildly antiseptic mouth-wash is used every four hours, and pain can be controlled by the use of aspirin. A plaster of hot antiphlogistine, applied externally to the face, is very soothing. The sutures are removed on the fourth day, and pain and swelling have usually gone by the seventh. Dentures may be fitted in approximately four weeks after the operation.

Case Records

The following are four selected cases which illustrate the results obtained.

Case 1.—The patient had suffered from ill-health for many years, the chief trouble being arthritis of the hip-joint. He had had antrum, appendix, and teeth operated upon. For two years after the removal of the teeth his dentures were troublesome. *X*-ray examination showed the bone in the lower premolar, lower central incisor, and upper molar regions to be abnormal. A spear-point culture from the lower incisor region gave a growth of *Streptococcus haemolyticus*. At operation soft bone was removed from the affected regions. Three months after the operation dentures were fitted. These proved comfortable, and the general health was better.

Case 2.—The patient was suffering from bilateral antral empyema of fifteen years' duration. The radical operation had been performed and all the teeth extracted ten years previously. When the antral cavities were washed out pain was felt in the molar regions. *X* rays showed dark areas in the upper molar and premolar regions. Spear-point cultures gave growth of *Streptococcus haemolyticus* and *Staphylococcus aureus*. The infected areas were curetted, and within two months the discharge had ceased and dentures were fitted.

Case 3.—The patient had bilateral antral disease, and the ridges of the upper jaw were tender to pressure. *X*-ray examination showed abnormal bone in the upper premolar and molar regions. The outline of the tooth sockets could be seen in the incisor region. Spear-point culture gave growth of *Streptococcus haemolyticus*, non-haemolytic streptococcus, and *Staphylococcus aureus*. A quantity of diseased bone was removed and the antral disease cleared up.

Case 4.—The patient had suffered from sciatica for more than a year, and manipulative treatment had given no result. *X*-ray examination revealed areas of bony rarefaction in the upper right first premolar region, this tooth being absent. Spear-point culture gave *Staphylococcus aureus* in pure culture. The affected area was curetted and a vaccine was prepared from the culture. Three months later the sciatica was gone, and the patient was enjoying normal health.

I wish to acknowledge indebtedness to Dr. Hanschell and Mr. Walters for facilities for laboratory work, and to Captain W. A. D. Drummond for assistance on the clinical side.

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Clinical Memoranda

CYST OF THE THYMUS IN A NEWBORN BABY

According to the literature tumours of the thymus gland appear to be of extreme rarity. Osler quotes that not more than a hundred cases have been recorded. The commonest types of tumours seem to be sarcomatous in nature, while cysts have been regarded as being syphilitic in origin.

I recently encountered a case of cyst of the thymus gland which is sufficiently interesting to warrant publication.

On June 21st, at 9 p.m., I delivered a patient of an apparently healthy full-time female child, after a labour of about six hours. The confinement was a perfectly normal one and no instruments were used. From the moment the baby was born it cried incessantly. Having examined the infant, which seemed physically quite sound, I left the house at about 9.45 p.m. I was called out at 8 o'clock the following morning by the father, who informed me that the baby had been crying all night, and now appeared to be dying. On arrival at the house I found the child was dead.

On June 24th I performed a post-mortem examination. The baby weighed about 6¾ lb. There was no evidence of external violence to be seen. When the thorax was opened the most outstanding feature was the presence of a large globular swelling on the antero-lateral aspect of the right side of the thymus gland. On further examination this swelling proved to be a cyst about as large as a walnut, which appeared to be growing downwards and backwards. Immediately behind the inferior extremity of the cyst lay the ascending aorta. A thick, glairy fluid was expelled from the tumour. The thymus gland itself was greatly enlarged, and seemed to occupy a good deal of the upper portion of the thorax. No other abnormality was discovered at the examination except for a small cyst on the upper pole of the left kidney.

As a result of these findings I concluded that death was due to syncope caused by pressure of the enlarged thymus and cyst on the aorta.

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A CASE OF INTESTINAL OBSTRUCTION

The following example of intestinal obstruction of rare origin seems to merit record.

A married woman, aged 28, was admitted to the Royal Infirmary, Huddersfield, with the following history. She was quite well until two days before admission, when she commenced to have pain across the lower abdomen. This pain was continual, and, on admission to hospital, was felt more on the right side of the lower abdomen. She had no vomiting, and there was no history of bowel trouble. Micturition had been scalding for the last two weeks, but there was no frequency. Her last period was seven days before admission, and for about a year she had suffered from leucorrhoea, which was yellow and irritating.

Examination.—The abdomen was moving fairly well. Tenderness was marked in the right lower abdominal quadrant, and there was some rigidity. A tender, but not movable, mass was felt in this area. There was no abdominal distension, and nothing of importance was revealed per vaginam. It was thought that the most likely diagnosis was an appendix mass. Temperature 100°, pulse 96, respirations 22.

Operation.—A Battle incision was made, and the following were the findings. The last eight inches of the small intestine and the caecum were very enlarged and hard. The small intestine above this was only slightly distended. Under the impression that the condition was some unusual form of tuberculous caecum, because of the small bowel involvement, or perhaps one of neoplasm, an ileo-transverse colostomy was performed, and as the small intestine above the mass was not much distended and the patient's condition good, a resection of the affected ileum with the caecum and ascending colon was performed, it being necessary to enlarge the original Battle incision to permit this (the nerves being preserved). The specimen was opened, and was found to be packed with small particles that looked like pieces of wood, about 3 by 1/2 mm. The mucous membrane of the affected ileum and the caecum was extensively ulcerated, there being little normal mucous membrane left. The thickening of the wall of the bowel constituted a kind of solid oedema.

Progress.—On further questioning the patient it was discovered that she was very fond of coco-nut macaroons. It appears that she had made some of these cakes three days before admission to hospital, and had eaten the material which was left in the pot. The substance in her bowel was coco-nut. The presumption is that it had formed into a mass in her stomach and had passed to the ileo-caecal region, where it had become impacted. The patient made an uneventful recovery, leaving hospital quite fit. I am indebted to Mr. Pye-Smith for permission to publish this case.

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LIGATURE OF EXTERNAL ILIAC ARTERY AND VEIN IN A MAN AGED 67

A man, aged 67, who had been a labourer in a gasworks and had frequently been in contact with tar, presented himself with a raised ulcerated area on the left side of the scrotum of many years' duration. Removal of the growth, with both testicles and clearance of some slightly enlarged inguinal glands, was carried out ; section of the growth showed it to be an epithelioma, and section of the lymph glands showed chronic inflammatory change only.

The patient was seen eight months later. He had a swelling in the left Scarpa triangle at its upper part, there being a transmitted pulsation from the underlying femoral vessels ; the lump was the size of a hen's egg, and was fairly well fixed to the deep structures. It was thought hazardous to remove the malignant gland—for such it proved to be—at once for fear of being forced to tie off the vessels *in situ* as a necessary part of the operation, and it was decided to tie off the external iliac artery and vein as a preliminary operation and remove the gland when a collateral circulation had been established.

The classical incision parallel to and above the outer part of Poupart's ligament was made and the vessels reached by stripping up the peritoneum ; the vessels were tied off separately by means of a double thickness of No. 4 catgut and a lymph gland of the external iliac chain removed ; this on section showed chronic inflammatory changes only. The leg was kept warm in cotton-wool, and an electric lamp put inside the protecting cradle ; during the first nine days after operation there was no cause for anxiety, and it was noticed that the tumour in Scarpa's triangle was decreasing in size. On the tenth day his left leg swelled and became painful ; then it was feared that gangrene might set in : it was concluded that during the nine days after operation the amount of blood delivered by the collateral arteries was exactly balanced by the amount of blood drained away by the collateral veins, and that on the tenth day there was a sudden full opening out of the collateral arteries without a corresponding dilatation of the draining veins, and the obvious remedy was raising the foot of the bed as high as possible to invoke gravity. The swelling subsided during the next twenty-four hours. The gland was removed without event a few days later, and it was found possible to dissect it from the vessels with the sole sacrifice of the internal saphenous vein ; the patient made an uninterrupted recovery.

A section of the gland showed the cells to be similar in type to those of the parent growth.

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Reviews

PREVENTIVE ASPECTS OF MEDICINE

A series of lectures conducted at King's College Hospital Medical School in 1933–4 has now been published by the *Lancet* under the above title.[1] The General Medical Council has recorded its view that throughout the whole period of medical study the attention of students should be directed to the preventive aspects of medicine, and the Committee on Medical Education of the British Medical Association says in its recently published report that "from the beginning of the curriculum, and throughout, attention should be directed primarily to health, its preservation, perfection, or restoration, and not to disease." But there is advantage also in bringing together and summing up, for the benefit of both the student and the practitioner, the present volume of knowledge about the prevention of disease and the applications of this knowledge which fall within the range of day-to-day medical practice. This is what the book under review sets out to achieve. Altogether twenty-five lecturers, each a recognized authority on a branch of medicine, contribute articles which are, in most cases, models of concision, clearness, and accuracy. Names like those of Newman, Leonard Hill, Still, Glover, Greenwood, O'Brien, Poynton, Briscoe, and Topley convey a guarantee that the facts given are reliable and the views expressed are abreast of the times. There is, of course, no attempt to cover the whole field of public health: environmental hygiene is dealt with only in so far as it touches upon the work of the general practitioner. Otherwise the book covers the range of preventive medicine as applied, from the modern point of view, to the individual's mode of living. It is well printed, light to the hand, and contains a full index.

FILTERABLE VIRUSES

It is five years now since Dr. P. HAUDUROY produced his first book on filterable viruses. It was not confined solely to filterable viruses, but considered also the question of filterable forms of bacteria; in fact, quite a considerable space was devoted to the latter subject. The rapid advance made in our knowledge of filterable viruses since 1929 convinced Dr. Hauduroy that to bring his book up to date meant rewriting it. This he has done, and the result is an entirely new book entitled *Les Ultravirus Pathogenes et Saprophytes*,[2] concerning itself solely with the filterable viruses. The author has done wisely to exclude the filterable forms of bacteria, for, as he rightly says, these differ obviously from the filterable viruses and require separate treatment. This is not the only improvement; the whole book strikes one as better done, better balanced. The first portion, some sixty pages in extent, is devoted to technique—a valuable addition. It is perhaps inevitable that a national or even individual outlook should pertain where technique is concerned, but there is little excuse for passing over Elford's work when dealing with ultrafiltration. The sole reference to him here concerns the sterilization of collodion filters with ultra-violet light! And the section on staining viruses is inadequate: no mention is made of the use of Giemsa's or Castaneda's stains. Still there is much sound and valuable advice in these technical chapters.

The main portion of the book is devoted to a description of the different viruses pathogenic for plants, bacteria (bacteriophage), insects, birds, and mammals. The plant virus section is very sketchy—half a dozen pages in all. This is insufficient for a consideration of the many interesting facts which have been discovered in connexion with these plant diseases, particularly those concerning transmission. The section on bird viruses is quite comprehensive, but one is tempted to question the use of the term "parapsittacosis" for the virus of Pachecco. Apart from the fact that both this virus and psittacosis virus produce an illness in the parrot there is no resemblance, and, after all, the appearance of a sick parrot has little that is distinctive whatever the cause. The description of the mammalian viruses takes up about half the book. It is a little uneven, some sections being well done and quite adequate, others sketchy and inadequate. Trachoma, for instance, is dismissed in a dozen lines and warts in five, yet trachoma has been the subject of much interesting research, and Shope's work on papillomatosis of rabbits had given added interest to the question of warts. And the description of influenza finds no mention of the Hampstead work. Surely there was time to include this in view of its importance.

The closing chapters are of a general nature, such as the physical characters of viruses, their physiology, immunity to virus infections, their nature and origin, and the existence of saprophytic examples of this group of micro-organisms. Dr. Hauduroy is convinced that viruses are living things, and in the main his views conform closely to those held by the majority of virus workers in this country. The remarks on false invisibility strike the right note, but one is astonished to find vaccinia and herpes placed in the same size category as foot-and-mouth disease and the bacteriophage. Elford's work is completely overlooked, and Barnard's, too, for that matter, which is surprising since the author has obviously read widely in the virus literature. It is a pity, also, that the book has no index.

Although the modern textbooks of bacteriology devote a considerable space to a consideration of the filterable viruses, there is still room for a small book giving a reliable account of these agents which will serve as an introduction to the subject. Dr. R. W. FAIRBROTHER'S *Handbook of Filterable Viruses*[3] is just such a book. The author has a first-hand acquaintance with his subject. What is more, he has kept an open mind on the various controversial points inevitable in a rapidly developing study such as this one, and so is well fitted to the task he has set himself. The book is confined to those filterable viruses which cause disease in man. It opens with a brief historical outline, and then passes to a consideration of the nature of these viruses. The statement in this chapter (p. 11) that "there is every indication that the viruses . . . form a very heterogeneous group" is rather sweeping, and in the section on centrifugalization it seems rather misleading to cite some of the earlier experiments on psittacosis as an example of the errors inherent in this type of experiment. It was by means of the centrifuge and with this virus that it was first shown that the virulence and other specific properties resided in the elementary bodies. Following this are chapters on cultivation and microscopy and on epidemiology and immunity, both quite good, though we do not understand why the author should still have doubts about the test-tube immunity reactions. Classification has been wisely left alone, the viruses being merely grouped under the headings accepted, probable and possible. It is under these headings in the second half of the book that the viruses known to infect man are described. No one could expect to write a book

[1] *The Preventive Aspects of Medicine.* A Series of Lectures delivered at King's College Hospital Medical School. London: The Lancet Ltd. 1934. (Pp. 376. 10s. 6d. net.)

[2] *Les Ultravirus Pathogenes et Saprophytes.* Par Dr. Paul Hauduroy. Paris: Masson et Cie. 1934. (Pp. 462. 60 fr.)

[3] *Handbook of Filterable Viruses.* By R. W. Fairbrother, M.D., M.R.C.P. London: William Heinemann, Ltd. 1934. (Pp. 193. 7s. 6d. net.)

on this subject which would meet with general and unqualified approval, but Dr. Fairbrother has steered a very satisfactory middle course. It is the best book of its kind which has been produced, and can be strongly recommended to students of medicine who wish to know something of this important group of disease agents.

BASSINI'S OPERATION

It is just fifty years since Bassini of Padua published his method for the radical cure of an inguinal hernia, and in the next five years he operated upon 216 cases, in 200 of which the operation was a complete success. When we consider that this was a new operation of a complicated nature carried out before the days of aseptic technique, we must admit that such an achievement marked an epoch in the history of surgery. The original description of the operation was, however, lacking in detail, and its tradition is therefore far from exact. Professor CATTERINA of Genoa, a pupil and assistant of Bassini, has now rectified this in a manner fully worthy of the great teacher to whom the book[4] is intended as a tribute.

The volume consists of a very clear and exact description of the operation, which is in itself of value, but its chief glory, and one which places it on an entirely new plane in surgical literature, is a series of sixteen plates illustrating in colour on their natural scale the full details of the operation. The plates have been executed by Dr. Orazio Gaigher from dissections prepared by Professor Catterina, and they entirely eclipse any productions of the kind which we have ever seen. Only a combination of high technical knowledge with supreme artistry in water-colour drawing could have produced such exquisite work. As a precise description of a particular operation the book is of real value, but as an artistic production it will be the envy of every surgeon who has ever attempted to describe his work.

An English translation has been published almost simultaneously by Messrs. H. K. Lewis at 30s.

SPINAL ANAESTHESIA

Dr. G. R. VEHRS begins the preface to his volume on *Spinal Anaesthesia*[5] with the following sentence: "This book constitutes a survey of the experimental and clinical records in the field of spinal anaesthesia for the past forty-nine years." This statement is definitely misleading, and the reader who turns the pages for details in the administration of stovaine or percaine will receive a rude shock. Practically no mention is made of these two drugs, which are still serving a useful purpose both in this country and on the Continent. Stovaine held the field for many years, and it is surprising that no mention, except in a list of references, is made of Barker's work with heavy solutions of this drug. As a practical handbook in the use of novocain for spinal anaesthesia, however, this book has much to commend it. The author has evidently taken considerable pains to perfect his technique, and it would appear that, in his hands, spinal anaesthesia with novocain is perfectly controllable.

The opening chapters deal with the anatomy and physiology of the central nervous system, and with the characters of the cerebro-spinal fluid. Although the chemistry and physics of the fluid are dealt with no mention is made of its specific gravity—a curious omission in a work of this sort. It is also a little startling to see that one of the functions of the cerebro-spinal fluid is to permit anaesthesia. The same might be said of the respiratory tract or the rectum. Chapters are devoted to circulation and respiration, and the effect that a spinal anaesthetic has on these two systems. The author discusses fully the action of novocain on the spinal nerves, and explains why the motor block produced is usually less in extent than the sensory block. In his own practice he claims to produce the required amount of anaesthesia, and for the requisite time, by varying the dose of novocain injected and by varying the posture of the patient after injection.

In spite of its omissions this book should provide much of interest to those who frequently employ spinal anaesthesia. It is well produced, and there are numerous illustrations and diagrams. There are also good lists of references at the end of many of the chapters.

AN IRISH MEDICAL MANUSCRIPT

The fifth fasciculus of *Irish Texts*[6] is a handbook of gynaecology and midwifery translated or adapted from the *Rosa Anglica* of John of Gaddesden and from the *Trotula* of the school of Salernum. It is preceded by a treatise on the treatment of wounds, by some good counsel to the physician himself, and by a discussion on the treatment of scabies. The transcription has been made by WINIFRED WULFF, Ph.D., who has already edited an Irish translation of a part of the *Rosa Anglica*, and the fasciculus is dedicated to Dr. Singer and to Dr. Kirkpatrick. The manuscript is described as being written on vellum, richly illuminated, "and the age of the Lord when this book was made was one thousand years and three hundred years and twice twenty years and twelve years more; this book was finished in the year in which Shane Og Mac an Aithne was killed; and it was in the house of Dermot O'Meagher's son it was written." The names of the scribe and of the translator are not known. We are grateful to Dr. Wulff for the transcription, but there is still much work to be done in connexion with the manuscript, apart from the desire to know who Shane was, why he was killed, and where Dermot lived. Dr. Wulff has supplied parallel passages from the printed editions issued two hundred years after the manuscript was written, but this is not enough. A literal translation into Latin or English should be made for the convenience of those who are ignorant of the Irish language. It would then be possible to determine how far this early manuscript differs from the printed versions of the *Trotula* and *Rosa*.

DISEASES OF THE TONSIL

In *Modern Advances in Diseases of the Throat*,[7] by Mr. ARTHUR MILLER, a compilation has been made of some literature mostly published during the last four or five years and relating almost entirely to diseases of the faucial tonsils. The author has relied mainly for his material on *Tonsil Surgery*, by Dr. Robert H. Fowler, and *Children's Tonsils In or Out*, by Dr. Kaiser, both of which excellent books were reviewed in these columns at the time of publication. He also makes use of the Semon Lecture delivered by Professor Kahler in 1932 and some articles and abstracts in the *Journal of Laryngology*.

The book might be useful to a reader quite unacquainted with recent literature, but as no attempt has been made to review recent work in the whole field of laryngology the title produces a feeling of disappointment. The last

[4] *L'Opération de Bassini pour la Guérison Radicale de la Hernie Inguinale*. Par Docteur Attilio Catterina. Paris: Félix Alcan. 1934. (Pp. 57; 16 plates.)

[5] *Spinal Anaesthesia. Technic and Clinical Application*. By George Rudolph Vehrs, M.D. London: H. Kimpton. 1934. (Pp. 269; 81 figures. 21s. net.)

[6] *Irish Texts*. Fasciculus v. Edited by J. Fraser, P. Grosjean, and S. J. and J. G. O'Keeffe. London: Sheed and Ward. 1934. (Pp. 100. 5s. net.)

[7] *Modern Advances in Diseases of the Throat*. By Arthur Miller, F.R.C.S., D.L.O. London: H. K. Lewis and Co. Ltd. 1934 (Pp. xii + 120; 40 figures, 1 coloured plate. 10s. 6d. net.)

chapter, in which the author dismisses malignant disease of the tonsils and soft palate in three pages with an unconvincing advocacy of the advantages of diathermy, completes the impression of the superficial and ephemeral character of the book. The admirable way in which the publishers have produced the letterpress and reproduced the illustrations is worthy of a more serious contribution to the literature of the subject chosen.

Notes on Books

Dr. C. F. WHITE's *Aids to Sanitary Science*[8] has reached its second edition. Much useful information is contained within its modest limits, but compression has sometimes resulted in sheer obscurity, as in the section on vital statistics. Further, the logarithmic method, so called, should be used only for the recalculation of erroneous inter-census population estimates. The article on meteorology does not refer to the Kew pattern barometer or to the millibar of pressure, though both these are now official at the Meteorological Office. It should be noted also that yellow fever is by no means eradicated from West Africa, and that *Leptospira icteroides* never was its causative organism. Such defects as the foregoing mar a book which, on the whole, is pleasantly written and quite frequently displays exemplary conciseness.

A new reference book, *The Author's and Writer's Who's Who*,[9] has been launched by the Shaw Publishing Company, under the editorship of Mr. EDWARD MARTELL, with the assistance of an advisory committee. It is mainly intended as a guide-book for authors, editors, journalists, and publishers in all matters relating to their work. Its chief feature is a biographical directory of more than 600 pages, arranged in double columns on the plan of *Who's Who*. There is also a register of writers on specialized subjects, an index of works of reference and sources of information, and a directory of British and over-seas publications, together with much other classified information of interest and value to persons concerned with the art of writing or the business of literary production.

At a meeting of the Medical Association of South Africa, held at Johannesburg in November, 1932, Dr. A. S. BOYD read a paper on the "Treatment of Cancer by Modified Methods in Serum Therapy, with Record of Recovery in a Case of Secondary Sarcoma." This has now been published in pamphlet form, with illustrations, by Messrs. Oliver and Boyd, of Tweeddale Court, Edinburgh.

The second and final part of the Handbook of Chemotherapy,[10] by Dr. V. FISCHL and Professor H. SCHLOSSBERGER, is concerned with metallic compounds, the first part (reviewed in these columns on August 20th, 1932) with the non-metallic compounds. The chief metals discussed in the part under review are arsenic (207 pages), mercury (75 pages), gold (51 pages), antimony (42 pages). Other metals are dealt with in less than twenty pages each. Iodine compounds are included in this volume (58 pages). In the first place the authors are to be congratulated on having provided an encyclopaedia of the science of chemotherapy in a volume of under 1,000 pages. This has been achieved by a liberal use of tables. For example, the article on arsenical derivatives occupies 204 pages, which are divided into 143 pages of print, 27 pages of tabular matter, and 34 pages of references. These figures indicate the general character of the book, which is essentially that of a work of reference. The need for such a work is best indicated by the fact that the references to the literature on organic arsenicals number nearly 3,000. It will certainly be found invaluable by all who are interested in the subject of chemotherapy. Perusal of its pages impresses the reader forcibly with the vast amount of work that has been carried out in recent years in chemotherapy. The tables give data concerning the activity of thousands of different compounds, and it must be remembered that the published results do not indicate the total work performed, for in this subject a large proportion of negative findings are never published. The authors have provided a satisfactory guide to a mass of literature which is almost inaccessible owing to its bulk.

[8] *Aids to Sanitary Science and Law*. By C. F. White, M.B., Ch.B., D.P.H., D.T.M. Revised by Hugh Willoughby, M.R.C.S., L.R.C.P., D.P.H., D.T.M. and H. Second edition. London: Baillière, Tindall and Cox. 1934. (Pp. vii + 521. 4s. 6d.)

[9] *The Author's and Writer's Who's Who, 1934*. Edited by Edward Martell. London: Shaw Publishing Company, Ltd. 1934. (Pp. 894. 15s. net.)

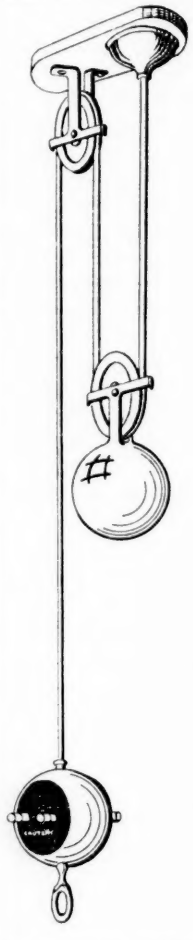
[10] *Handbuch der Chemotherapie*. By Dr. Viktor Fischl and Professor Dr. Hans Schlossberger. Part II. Leipzig: Fischers Medizinische Buchhandlung. 1934. (Pp. 898. M. 55.)

Preparations and Appliances

CAUTERY AND LIGHT APPARATUS IN THE OPERATING THEATRE

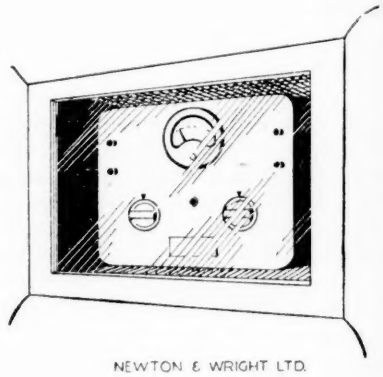
Dr. R. E. JOWETT (Sunderland) writes:

The apparatus described below comprises a control unit arranged for mounting on the wall. In my operating theatre this has been set in a suitable recess behind a glass panel.



The control provides a transformer, having two secondary windings for cautery and surgical light circuits respectively, each being provided with rotatory rheostats. The secondary circuits render the apparatus practically shock-proof. A voltmeter, having a scale reading from 0 to 10, is connected across the light circuit—a handy safeguard in preventing the burning out of small illuminating lamps. The considerable range necessary for bronchoscope lamps and the larger bulbs used in headlights is nevertheless available.

Leading from this control unit, cables are provided in the building to a point above the operating



NEWTON & WRIGHT LTD.

table, from which point a rubber-covered multiple cable is suspended. This cable is of relatively large proportions, in order to reduce its electrical resistance to a minimum, having regard to the low voltage used in cautery work. This cable, dropping from the ceiling, is adjustable by means of a simple counterweight and pulley system, and terminates in a chromium-plated sphere fitted with two pairs of terminals for connexion of the cautery and light instruments. Cautery burners requiring current up to 30 amperes may be used.

The figure gives a good idea of the apparatus, and it will be observed that the design eliminates the use of trailing cables and "extras" near the operating table. It can be washed down, and there are no projecting parts to collect dust. The sphere is easily pushed away to give head room when working, whilst the surgeon's mobility is but little interfered with. The fitting is neat, and has proved extremely satisfactory in use.

It was made for me by Messrs. Newton and Wright Ltd., 471–3, Hornsey Road, N.19.

THE BRITISH ASSOCIATION*

PHYSIOLCGY OF VISION

Two papers in the Section of Physiology dealt with theories relating to visual sensation. Dr. F. W. Edridge-Green said that it had been proved that the cones of the retina were the percipient elements for vision, but the hypothesis that their direct stimulation by light was the essential factor had been assumed in the absence of evidence to this effect. Indeed, the assumption that the colourless and transparent cones could be so stimulated was contrary to all photo-chemical laws, since no effect could be produced by light without its being absorbed. The speaker held that stimulation of the cones was effected as the result of the photo-chemical decomposition of the liquid surrounding them, sensitized by the visual purple. The rods were not percipient elements, but controlled this visual purple. He contended that this theory explained satisfactorily every known fact of vision, including numerous ones which were inexplicable from any other standpoint.

Dr. Ivy Mackenzie pointed out that the function of the anatomical substratum of human vision might be considered from the point of view of physics and biology, as well as of physiology. Physical considerations predominated in the analysis of events in front of the retina. Psychological interpretation played a large part in the events behind the areae striatae, while the processes between the retinae and areae striatae lent themselves to anatomical and physiological observation. The visual pathways between the retinae and areae striatae comprised the basis of visual sensation, as distinct from perception. This neural compendium was of bilaterally symmetrical conformation, and a knowledge of its constituent parts provided the main standard of reference in the localization of brain disease. In the lower vertebrates the bilateral symmetry of this neural compendium was related to the symmetrical character of somatic movement. The tendency to right-handedness in the human subject revealed a difference between the right and left sides of the brain in respect of participation in visual reaction, but only when vision was concerned with perceptual reactions.

PSYCHOLOGY OF SOCIAL PROBLEMS

The presidential address of Dr. Shepherd Dawson in the Section of Psychology contained a strong appeal for the further investigation of the mental aspects of social welfare, which, he said, had been relatively neglected in comparison with the attention paid to the material aspects. The solution of problems such as those of supply and demand, labour and capital, law and order, hygiene, housing, and local and international rivalries, were to be found ultimately in the forces which moved men to action, in their inherited tendencies and acquired habits, in the mentalities of the groups to which they belonged, and in their relations to these groups. If opinions were to yield place to knowledge, the scientific method was just as necessary here as it was in chemistry, physics, or biology. There was a real distinction between ability and capacity ; the first was actual, the second potential. Ability was measurable by what could be done here and now ; capacity could usually be estimated by what could be done after a course of training. All examinations were tests of ability. Innate qualities only existed with reference to certain external conditions, and must be diagnosed and measured in relation to those conditions. Where the essential training and environmental conditions varied, inferences regarding capacity could only be made with little certainty. Psychologists had hitherto been more concerned to distinguish and measure different kinds of ability which seemed to be dependent on native capacity than to prove their innate basis. It might be possible in the future to evaluate mental characters with some approximation to the accuracy with which physical characters could be assessed. What was needed was more extensive and more co-operative work. The fact that on the whole the least efficient members of the community had the largest families had caused some concern, for it suggested a dilution of the national stock-in-trade. There was, however, very little exact information about the intellect of parents, the number of children who survived to establish families of their own, and their mental status. What little there was pointed to the need of further investigation, for it suggested that the casualties were higher among dull children, but that the losses were more than made good by the greater number of births. The problem was not so serious as some had maintained, but it was sufficiently serious to make this and other problems of mental inheritance worthy of investigation. There seemed to be evidence that there was a correlation between the intelligence of parent and of child ; bright parents had a higher percentage of bright children, and defective parents of defective children, but defective parents sometimes had bright children. It seemed possible that the mental deficiency of either defective or bright parents might be due either to external causes or to defective inheritance. The theories of genetic inheritance which had proved to be true in the case of plants, the lower animals, and human anatomical and physiological characters, might apply also to mental characters. If this were so, it was important that these characters should be distinguished, and the manner of their inheritance traced. This would demand the co-operation on a big scale of medical practitioners, biologists, statisticians, and teachers.

* Concluded from page 527.

SLEEP AND HYPNOSIS

Dr. William Brown, Wilde Reader in Mental Philosophy, Oxford, delivered an address in which he compared the hypnotic state with natural sleep, citing experimental and clinical evidence. Deep-going differences had been thus revealed, as well as superficial resemblances. For example, the muscles were relaxed in sleep, but rigid in hypnosis ; tendon reflexes diminished with the onset of sleep, and eventually disappeared, but were retained in all stages of hypnosis. Voluntary reactions to a prearranged stimulus or signal could be elicited in hypnosis, but not in sleep. Yet sleep could pass into hypnosis, and vice versa ; there was therefore reason to recognize the existence of some close relationship between them. Moreover, mental dissociation with amnesia could occur in both conditions. Both states might be therapeutically recuperative, and both involved susceptibility to suggestion. Mediumistic trance and cataleptic stupor showed close similarities with the hypnotic state. Sleep was linked up with other manifestations of these states in the phenomenon of dreaming. Measurement of the psycho-galvanic reactions in these various states had thrown further light on their psycho-physiological resemblances and differences. On the neurological side the relation of sleep to hypnosis was probably best expressed in terms of Pavlov's theory, according to which both states involved an internal inhibition in the cerebral cortex ; this spread to the subcortical centres in sleep, but remained limited to the cortex in hypnosis. From the therapeutic standpoint hypnosis had proved useful in some cases of war neurosis, in the recall of forgotten emotional upsets which were giving rise to such phenomena as somnambulism, and in the adjusting of disturbances referable to the deeper levels of nerve function.

Mr. W. Whately Carington described an investigation in which word association tests had been applied to three mediums in their normal states and to five trance personalities associated with them. In one case a clear-cut difference between the normal and trance personalities had been thus disclosed. In the second an equally unmistakable similarity had been found. In the third, where four personalities were involved, a complex system of relationships had been discovered. The classical view of secondary personalities, he pointed out, would anticipate significantly similar sets of reactions (determined by the common subconscious) in cases where the trance was genuine, so that no witting misdirection occurred, and suggested that even the latter would not escape detection by the psycho-galvanic reflex. It was accordingly rather difficult to reconcile the results thus obtained with current theory.

VOCATIONAL GUIDANCE

The methods and results of vocational guidance were discussed by various readers of papers in the Section of Psychology. Miss J. A. Wales, who described the current methods in Berlin, outlined the arrangement for the giving of trade talks by the Ministry of Labour's vocational advisers to children who were about to leave school. She explained the organization of the juvenile departments of the employment of labour exchanges, where individual advice was given. Cases of difficulty were referred to the special medical officer if the difficulty was one of health, or to the psychological department if there was any doubt as to vocational aptitude. The results of a vocational guidance experiment in Fife were also reported. A group of 472 children attending urban and rural schools had been examined; their ages were between 11 and 12, and psychological re-examinations had followed at approximately yearly periods during the subsequent school attendance. The town children proved to be on the whole superior to the country children in abstract tests, but inferior in practical tests. The verbal tests were found to have the highest consistency in the age period under review. The follow-up studies yielded tentative estimates of the minimal qualifications necessary for various kinds of work. Mr. C. A. Oakley described a recent survey made of all the vocations which school children were likely to take up, from accountancy to wholesale selling, with a view to assisting vocational advisers in schools in dealing with normal cases. He announced that an occupational survey had been prepared, which included information about the necessary abilities and other qualities. Another survey had been made with the intention of determining what psychological tests for children over the age of 11 were at present being used in Great Britain. Mr. A. Rodger described the results of an examination by the National Institute of Industrial Psychology of 400 new Borstal boys. Of those who were subsequently put into work-parties judged suitable for them by the institute, 69.5 per cent. had proved successful. Of the control group in which the Borstal housemasters had been the sole judges, 45.6 per cent. had proved successful. He regarded this difference as statistically significant. He added that a survey of the "failures" of the National Institute showed clearly the importance of the part which should be played in vocational guidance by the study of temperament. Dr. D. B. Cattell maintained that the psychologist ought to be an integral member of the local education service. His main value was as a psychotherapeutist, treating difficult, neurotic, and delinquent children, who were far more numerous and much more neglected than was generally supposed. He was also needed to grade normal children, and to select defective children and those with special educational disabilities. He should design schemes of guidance, and advise on matters relating to the curriculum and school organization. A nucleus of teachers should be trained in routine mental testing.

VITAMIN C

A discussion was held in the Section of Chemistry on ascorbic acid (vitamin C). The history of the subject was narrated by Professor A. Harden, who traced the steps by which the strongly reducing hexuronic acid found in the suprarenal glands and in many vegetable juices had been shown to have powerful antiscorbutic properties. The easy preparation of this substance in quantity from paprika had provided material for the determination of its constitution, its synthesis, and the demonstration of its full antiscorbutic potency. Professor A. Szent-Györgyi said that this acid had become available for medicine too recently to permit full appreciation of its medical applications, but the preliminary clinical investigation had revealed some very striking and unexpected effects. It seemed to be able to cure several diseases against which medicine had hitherto striven in vain, such as purpura haemorrhagica, Werlhoff's disease, certain forms of haemorrhagic nephritis, haemophilia, and pyorrhoea. Such curative effects suggested that humanity was suffering much more gravely from lack of vitamin C than had been realized previously. The major part of pathological pigmentations could be made to disappear by its exhibition. In the short space of time of two years the mysterious vitamin C had been identified, its chemical structure determined, and its synthesis effected. This unparalleled advance had been entirely due to the closest and most friendly international co-operation.

COWS' MILK

The Sections of Chemistry and Agriculture held a joint discussion on the chemistry of milk. Dr. J. F. Tocher stated that the proportions of the constituents of milk varied widely from sample to sample even in the case of bulked milk. In respect of fat and solids-not-fat percentages it had been shown that many cases occurred where the values fell below the prescribed limits under the regulations; these had been made at a time when no accurate knowledge existed of the observed minimum limits in the case of herds. The speaker remarked that this was an illustration of the importance of legal enactments following scientific knowledge, and not preceding it. One of the difficulties encountered was the method of detecting watering, and many cases had occurred when genuine milk had been erroneously condemned as having been watered. An equation had now been found by the speaker from which it was possible to detect watering within certain limits; this could be used in conjunction with the observation of the freezing point. The equation gave the relationship of the four chief constituents to the total solids other than butter fat. The predicted solids had been found to approximate closely to the actual solids in samples from individual cows. When, however, a sample was watered, the predicted values differed significantly from the actual values. Dr. Tocher considered that milk should not be condemned on the results of freezing-point determinations alone. There was as yet no standard for the freezing point of milk, and analysts were not agreed as to the nearest approach to the freezing point of water which occurred in genuine samples of milk. Dr. W. L. Davies produced a table showing the expected levels of composition of normal cows' milk and of milk which must be considered abnormal. There was evidence that abnormality was due to inefficiency in the secretory process in the elaboration of casein from the nitrogenous compounds of the blood and in secreting glucose. Abnormality in the buffer value in the acid range, in the balance of acidic and basic constituents, in the distribution of ionic and non-ionic metallic radicals (calcium), in the amounts of the various forms of casein present, and in the amount of heat-coagulable protein, was reflected by abnormality in rennet action, in "curd tension," and in heat stability at temperatures above 100° C. Dr. S. K. Kon said that biological tests had demonstrated marked seasonal variations in the total vitamin A activity and the vitamin D content of milk. Physical measurements had shown a similar fluctuation in the carotene content. The contents of the three forms of vitamin B appeared to be constant throughout the year, not being affected by the seasons. Vitamin C in milk was either rapidly destroyed by visible light or else it underwent reversible oxidation, the product reacting no more with the vitamin C reagent. The loss in activity of vitamin D was more marked in autumn and winter butters.

The association of members of the Chartered Society of Massage and Medical Gymnastics in private practice has issued a revised edition, dated August, 1934, of its *Directory*. Every person mentioned therein is qualified in massage and is registered with the society. Many hold additional qualifications, which are indicated by abbreviations. All the members have adopted an ethical code which pledges them to work only under the direction of registered medical practitioners. A copy of the *Directory* will be sent, post free, to any doctor on application to the honorary secretary, P.P.A., "Hygeia," Falmouth, Cornwall.

British Medical Journal

SATURDAY, SEPTEMBER 22nd, 1934

INSURANCE AND PUBLIC HEALTH

One of the most cogent and important criticisms of national health insurance systems is to be found in the *Canadian Public Health Journal* for July of this year. The article is not by a member of the medical profession, but comes from an eminent consulting actuary, Mr. Hugh H. Wolfenden of Toronto. It embodies an address given in that city in May, 1934, at a conference of the Canadian Public Health Association, the Ontario Health Officers' Association, and the Ontario Medical Association. The subject is admirably presented and the article very well written. It does not deal with any detailed features of national health insurance schemes or even with the actuarial problems which arise in connexion with them, but proceeds, after a brief review of the early history of insurance data and the relations between actuaries and medical officers of health, to re-examine briefly the whole problem which such schemes are designed to meet, without preconceived notions of what the best solution may ultimately prove to be.

In the course of his remarkably clear and ordered discussion the author brings out two points of fundamental importance which have been almost universally ignored or slurred over in conferences and writings on this subject. One of these is the way in which existing national health insurance schemes depart from strict conformity with the principle of insurance ; the other is the appropriate position of health insurance in any comprehensive public health programme. Neither of these matters has, of course, been entirely outside the vision of some of those who in this country were responsible for initiating national health insurance, or of some of those whose business it has been to administer it ; but they have not previously been enunciated so succinctly and definitely as in Mr. Wolfenden's article. In the space at his disposal the author is unable to consider them fully or to discuss whatever justification may be alleged for the unusual features to which attention is drawn. It may be wise, therefore, to emphasize that further elucidation and elaboration of these points would be valuable.

"A true insurance plan implies simply the co-operative association of a large number of individuals, who agree to share amongst themselves the burdens arising from the occurrence of a particular contingency (in this case sickness) by payment of the necessary contributions into a common fund ; and it is fundamental that the group of persons must be reasonably homogeneous, that the risks must be predictable within certain obviously narrow limits, and that the claims must be absolutely provable."

With voluntary insurance funds the ultimate responsibility is the concern always of the members themselves, and cannot be shifted on to other persons or the State. With compulsory national health insurance schemes as so far established, though the real insurance principle of shifting the burden from the individual to a homogeneous group of his own fellow members is not ignored, it is vitiated and overborne by the fact that this is not done without external aid. Indeed, the main feature of the schemes is a transference of a large part of the burden from those of the limited class included within the scheme on to other shoulders—those of the employers and the tax-payers. This feature being so prominent there comes into force the inevitable tendency to exploit the other man's ability to pay, and sometimes to prolong sickness through the continuance of which benefits may be obtained. All this is obviously true, and should be clearly envisaged. Yet it may still be worth while for the State—that is, the community in general—to establish and support such a system, and knowingly to carry some of the load and to compel employers to take their share, even while recognizing its drawbacks and imposing conditions and regulations with a view to minimizing these as far as may be. Whether this is worth while, and, if so, in what proportions the burdens should be distributed, is not in the least a medical question, but must be determined by each State in the light of its own economic, social, and political conditions. At present, however, some such system appears to be an almost essential feature of the social economy of Western civilization on its existing basis.

Further, unless illness is to be regarded as being either a mysterious dispensation of providence or a quite unavoidable accident, it is contended that the establishment of any national health insurance system which removes the main financial obligations of illness from one section of the community to the rest should logically be preceded, or at least accompanied, by extensive health propaganda, by the enforcement of public health measures by penalties for their breach, and by the requirement of compulsory periodic health examinations of every individual, as well as the comprehensive registration of sickness. These are looked upon as essential measures of control, without which the insurance scheme must be inequitable to the insured and unjust to the uninsured portion of the community. "We are permitting people to become ill individually through misfortune or ignorance or carelessness, but when they have succeeded in becoming ill it is then said to be the responsibility of the whole community to cure them." It may be true that in a comprehensive review of preventive health measures *de novo* it would be "much more logical to consider the establishment of health insurance to alleviate the economic burdens of the residual sickness which the public health programme would be unable to prevent" ; and that "health insurance in such circumstances would cost far less than under present conditions and would be far easier to control." It must be remembered, however, that, after all, in a very large number of cases illness is a sheer misfortune and that very few sufferers

really enjoy it ; that in a further proportion it is the community rather than the individual who is at fault ; and that, as a matter of practice, it would almost always be impossible to prove that a particular illness had been brought about exclusively by the patient's own wilfulness or carelessness.

The place of the English insurance scheme among preventive health measures was not ignored by its promoters, although, apart from a small amount of health propaganda undertaken by some insurance committees and the much more important preventive work done by insurance medical practitioners in their daily consultations, full advantage has never been taken of the opportunities afforded. More measures of control may be needed, and the relative advantages and disadvantages of compulsory periodic health examinations and of the systematic and confidential registration of illness, or of some particular forms of illness, might well be further considered. Towards the conclusion of his article Mr. Wolfenden points out that, whatever form of insurance is adopted or whatever are the conditions in which it is established, the fullest co-operation between the public health officers, the medical and dental professions, and the actuary would still be required.

PROBLEMS OF SOCIAL PSYCHOLOGY

The presidential address by Dr. Shepherd Dawson to the Section of Psychology at the recent meeting of the British Association was mainly concerned with the assessment of natural capacity, particularly with the problems of differentiating its biological determinants from those which depended on external conditions. The President made a useful distinction between ability and capacity. The former is the resultant of innate processes and the totality of post-natal experiences summed up in the term "environment" or "nurture" ; the latter, a kind of Kantian noumenon, is a quality or complex of qualities the reality of which can only be inferred from the knowledge or skill through which it finds its expression. Mental tests, however scrupulously devised, are primarily measures of ability ; it is only when the innate qualities determining ability are unaffected or hardly affected by training that such tests also gauge capacity. To the psychologist the distinction is important in so far as it safeguards him from the error of considering the individual in a social vacuum—that is, without reference to the kind of society he lives in and the influences and incentives to which he is subjected. It does not, of course, follow that in a society which enjoyed (according to the adherents of one political philosophy) or endured (according to those who hold the opposite views) a condition of economic equality the differences between one man and the next would only be those which were genetically determined and thus a measure of relative biological worth. Even within the same family, as Dr. Dawson pointed out, there occur environmental vicissitudes which may affect the ultimate qualities of its members. Parents, for instance, "become more experienced, or more indulgent, in the management of their children ; school-fellows vary ; and the children themselves vary in their relationships to one another and to the rest of the world."

The problems of the social psychologist are immensely complicated by our living in communities of which all the members do not start at scratch, and there could be no dissent from Dr. Dawson's view that the most humane method of overcoming this difficulty would be "to improve the conditions of life so as to give all a chance." Even then there would remain the difficulty of isolating and defining mental characteristics. As an instance of this problem, Dr. Dawson cited the confusion that has been created by the manifold definitions of mental defectiveness. According to the law, the feebleminded are "persons in whose case there exists from birth or from an early age mental defectiveness so pronounced that they require care, supervision, and control" ; but this description merely relates an undefined psychological state to equally undefined external circumstances. Ability to look after oneself and one's affairs without supervision obviously depends in large measure upon the nature of those affairs, and thus upon the social and physical environment—a proposition which leads to the curious conclusion that a man may be feebleminded in one environment and not in another. Dr. Dawson makes the ingenious suggestion that the increase in the incidence of defectiveness which has been attributed to a disadvantageous differential birth rate may in fact be due to the increasing complexities of civilized life, which make excessive demands on intellects that could have coped satisfactorily with the simpler conditions of, say, fifty years ago. The psychological definition of mental deficiency is hardly more satisfactory. It is based on a statistical convention that places the borderline of normality between the mental ratios of 60 and 80. But this apparent exactitude may be misleading, first, because none of the mental tests in regular use can differentiate ability from capacity with complete certainty, and, secondly, because, as Dr. Dawson pointed out, feeblemindedness may be due to a variety of genetic factors, and among its forms there may be some which are not distinguishable at all by means of intelligence ratios.

Genetical studies on the inheritance of ability and defectiveness have occasionally yielded useful information, but in many of them too much reliance "has been placed on rough-and-ready estimates based largely on social and professional success." One of the most carefully controlled studies in this class—*An Investigation into the Relation between Intelligence and Inheritance*,[1] by Dr. Evelyn M. Lawrence—supported the opinion that intelligence is hereditary and more abundant in the higher than in the lower social levels, but only with very material qualifications. In the first place, the difference between the classes, in circum-

[1] Cambridge University Press, 1931.

stances of equal environmental opportunity, did not appear to be very great, and in the second, the large number of low intelligences in the investigator's highest class, and the even more striking list of brilliant children in the two lowest classes, showed the hazardousness of generalizations about social classes as such. Dr. Dawson sums up the matter in the statement that the best-founded studies into the inheritance of intellect have shown "that bright parents have a higher proportion of bright children and that defective parents have a bigger proportion of defective children than do normal parents, but they have also shown that normal, even brilliant parents sometimes have defective children, that defective parents sometimes have normal children, and they suggest that the mental deficiency of children of either bright or dull parents may be due either to external causes or to defective inheritance. The main facts have probably been made out, but the details are lacking, and will not be available until exact measurements have been made of the mental traits of parents and their children under conditions in which social opportunities and encouragements are equal for all." His final conclusion, that the search for unitary mental traits "will demand the co-operation on a big scale, not only of psychologists, but also of biologists, statisticians, teachers, medical men, and others," gives a just indication of the immensity of the difficulties that must be overcome before the genetics of intellect are placed on a sound scientific footing.

THE CORONARY ARTERIES IN RHEUMATIC FEVER

Acute inflammatory changes have in the past been described as occurring in the coronary arteries, and involving all their coats, in a variety of general infections, including typhoid fever, diphtheria, influenza, scarlet fever, and septic and pyaemic diseases. Similarly, these diseases may produce degenerative changes in the vessels, but their connexion with arteriosclerosis or atheroma is not clear. Rheumatic fever is another infectious disease capable of producing arterial lesions, and the manner and frequency of these changes has been investigated recently by H. T. Karsner and F. Bayless.[1] They summarize the findings of other workers on the histological changes in the coronaries in rheumatic fever, and briefly consider the relation of these changes to myocardial damage, arteriosclerosis, and cardiac pain and arrhythmias, and then give the results of their examination of fifty-six hearts that showed typical rheumatic inflammation. Of the fifty-six cases investigated there was a history of rheumatic fever in forty-seven and of chorea in one—probably a higher proportion than one might get in this country from any large series of patients with rheumatic heart disease. The ages of the patients ranged from 2½ to 67 years, and sections of the coronaries revealed in all cases oedema and fibrinoid (an intensely acidophilic substance arranged in fibrillar fashion and found most often in the media), while in the majority there were chromotropic change and alterations in the elastica; necrosis was found with a frequency which increased as age advanced. Fibrinoid is said to be present in only a few other conditions, all of which may be of allergic origin. Infiltration of mononuclear cells and Aschoff bodies was a common finding in the adventitia, as was fibrosis in all coats of the vessels. Most of these changes were also observed in the controls, but these differed in certain respects: chromotropic change was not found, fibrinoid was inconstant, and there were differences in the elastic tissue changes and the cell infiltrations. It was concluded that thrombosis in the coronaries is not more frequent in acute rheumatism than in other severe infections. Intimal fibrosis, especially affecting the smaller arteries, was much commoner in the young rheumatic patients than in controls of the same age groups, and the authors consider that this change is responsible for the muscle damage of rheumatic heart disease rather than a primary injury to the muscle itself; in other words, it is better considered as the result of ischaemia than as a myocarditis. They believe that these arterial lesions undergo a sequence of inflammatory reactions analogous to those of the valves, and that these changes result in correspondingly severe effects upon the muscle. On the clinical side the authors consider that these pathological changes may explain the precordial pain which is sometimes a symptom in rheumatic carditis. Pain of anginal type is, however, very rare, apart from aortic incompetence; but on a few occasions thrombosis of a large coronary has been reported as occurring in young subjects with rheumatic hearts. The salient point which emerges from this investigation is, from the clinician's point of view, the suggestion that the muscle failure which ultimately supervenes in most cases of rheumatic carditis is due essentially to lesions in the coronary arteries. Formerly, increased mechanical load imposed by valve lesions, and less often by adherent pericardium, was thought to be the important factor in leading to failure in rheumatic heart disease, but it is now generally believed that a healthy heart muscle will stand up to an abnormally heavy burden—for example, in coarctation of the aorta—for very long periods of time. On this view the rheumatic heart with valve disease fails chiefly because of impaired muscle, and only a secondary part is played by the valvular lesion; but according to the conception of Karsner and Bayless this muscle impairment is not a direct one, and results chiefly from an ischaemia.

[1] *Amer. Heart Journ.*, June, 1934, p. 557.

UNDERNOURISHMENT AND UNEMPLOYMENT

The Children's Minimum Campaign Committee is publishing this week a further statement, *Evidence on Malnutrition*, by way of supplement to the memorandum on *The Scale of Needs*, which was submitted to the Unemployment Assistance Board on behalf of the committee by its chairman, Miss Eleanor Rathbone, M.P., in July last.[1] The earlier memorandum urged that the scales on which unemployment allowances are to be granted should be based on scientifically determined estimates of the expenditure needed to satisfy the requirements of healthy living. The present statement gives expression to "a widespread feeling, especially among those whose work brings them into direct contact with the children of the working classes

[1] *British Medical Journal*, August 18th, 1934, p. 311.

in their homes or in the schools, that there exists to-day far more undernourishment than the official reports suggest." A number of considerations are put forward, each of which, in the committee's belief, contributes to the apparent discrepancy between the official figures of malnutrition among elementary school children and the "acknowledged fact that large numbers of these children come from homes where, after rent is paid, the income cannot possibly admit an expenditure on food and clothing which is adequate according to any authoritative scale." The general trend of the pamphlet may be gathered from the first four side-headings: "Absence of a satisfactory standard"; "The standards adopted may be too low"; "Effects of underfeeding may be delayed"; "The condition of the unemployed masked by improved general conditions." The great importance of adequate and proper food in the first five years of a child's life is discussed in relation to the general problem, followed by reference to two mitigating factors—the self-sacrifice of parents and the provision of school meals and milk by local education authorities. A point stressed is the difficulty of determining the early signs of malnutrition. "The inadequate provision made by many local authorities and the limitations of the medical test, which may only discover damage when it is too late to repair it, make it impossible to regard school meals as a reliable corrective for an inadequate income in the home." Lastly, the committee gives its reasons for believing that unwise expenditure by poor mothers as a cause of undernourishment is much exaggerated. The pamphlet ends with extracts from medical officers' reports which give some support to the committee's arguments. Copies (price 4d.) may be had from Miss Marjorie E. Green at Room 116, Thames House, Millbank, S.W.1.

THE QUINTUPLETS

In an age when records are being broken in almost every sphere of human activity it is pleasing to find that not even feats of reproduction escape public notice. In the early hours of May 28th this year Mrs. Elzire Dionne, a young French Canadian living in a settlement two hundred miles north of Lake Ontario, gave birth to five living girls, who at the time of writing are believed to be alive and well, and for whom an English newspaper has already coined the term "The Quins." The *Journal of the American Medical Association* devotes more than three pages in its issue of September 1st to a first-hand account of this astonishing event, contributed by Dr. A. R. Dafoe, who, though he arrived after the birth of two of the infants, was present during the delivery of the remaining three. Dr. Dafoe's narrative reads like a fairy tale. With simplicity, humour, vividness, a charming modesty, and a directness of style which many might envy, he describes the acute confusion into which he was plunged on arrival at the Dionne home, the extremely efficient way in which he met the situation, and the epic struggles that were made to keep the infants alive—on May 29th their total weight was but 13 lb. 6 oz. He found the sole preparations for the confinement consisted of a tea-kettle boiling on the stove; "the father had disappeared" (later on in his account there occurs the phrase "the husband was still missing"); he was still sleepy from a previous obstetric case that night; and the whole situation struck him as "unreal and dream-like." The delivery over, the story continues with the separate baptism of the five children; the collapse of the mother, which resulted in his having to leave the midwife with her hand on the fundus while he hurried off on a five-mile journey to get the priest; the mother's recovery; the relays of heated blankets to wrap round the babies; the scientifically tragic loss of the placenta; and the gradual restoration of order out of chaos. Later he describes how they overcame the problems of feeding and the subsequent organization required for the six patients. Dr. Dafoe's article gives a graphic picture of the rugged and virile French-Canadian settlers in his district of 400 square miles, with their sturdy, simple, and law-abiding attitude to life, their hard working days lumbering in the winter, farming, road-mending, and working in saw-mills in the summer, and he also conveys a good idea of some of the difficulties in a practice where at certain times of the year the outlying areas are reached only with difficulty by sleigh. In a comment with which he concludes his notes occurs the artless statement:

> "The publicity in connexion with this case has been a serious problem, and has caused me considerable trouble and worry. There has been no let-up from the moment of the uncle's naïve inquiry to the North Bay paper as to how much it would cost to insert a birth notice for five babies born at one time. At first I resented what I felt was an intrusion into my private and professional affairs. Then I came to realize that I had no right to object to what had become a matter of Continent-wide interest."

So ends a vivid and intensely interesting account of this incredible affair. It is perhaps not an improbable prediction that somewhere about 1950 an immense fortune awaits the "Quins" when they make their *debut* in cabaret or music-hall. One can, in fact, without difficulty imagine that the more enterprising showmen are at this very moment falling over each other in an attempt to secure a life-contract for what—to borrow Dr. Dafoe's epithet—may prove to be a Continent-wide "draw." But whatever their future careers may show, we can join in his wish that the babies "will continue to thrive and will be a credit to their family and to their country."

THE DENTAL SURGEON'S PLACE IN A GENERAL HOSPITAL

Recent correspondence, a paper by Mr. Harold Round, and an editorial in the *British Dental Journal* indicate considerable dissatisfaction by the dental profession with the status of the dentist on the staff of the general hospitals. Writing from Birmingham Mr. Round tells how, after an interval of thirty years, he was appointed dentist to the Queen's Hospital, and how, step by step, he attained his ideal of a self-contained unit with beds and a resident dental house-surgeon. But he had to prove his worth, and the *British Dental Journal* calls him "the happy warrior," and reviews the position held by the dentist in the large general hospitals of this country. In some the dental department is an important element in the hospital economy; in others the dental surgeon, while in theory on a level with the

honorary staff, does in fact occupy a subordinate place. Other specialisms, our contemporary remarks, have had the same fight—and have won handsomely. Dentistry lags behind, and in seeking to account for this the journal suggests that lack of a full medical education and the reluctance of other members of the staff to give up beds are not inconsiderable factors. As regards the first point the suggestion is made that candidates holding the higher dental diplomas may answer it—though it may be legitimately asked whether these higher diplomas provide very much more of a medical education than the ordinary L.D.S.—while the second can only be answered when the general staff and the managing committee appreciate the full value and needs of a dental department. At present, say Mr. Round and the *British Dental Journal*, the dentist must prove his worth before status or accommodation is accorded him. This, we think, is quite wrong. Exactly the opposite should obtain. Status and accommodation should be there, ready for the suitable man. The value of dentistry to medicine brooks no denial ; in many cases it is the only cure. Probably, in the medical mind, there will always be a swing of the pendulum between the point where every tooth is regarded as providing an "overload" of infection and the other extreme where dental sepsis is of no account ; but in the ordinary practice of a general hospital there must always be a large number of cases in which the value of dental treatment is beyond doubt, and those who provide this treatment should be given the same status and facilities as other members of the staff. It should further be remembered that in addition to very considerable medical knowledge the dentist must possess mechanical skill of no mean order to deal with cases such as fracture, replacement of lost parts, radium applicators, etc. That the dentist should still be doubtful of his status seems to us to indicate that many medical men pay but lip service to the much-talked-of co-operation between dentist and doctor. We hesitate to suggest that they are ignorant of the pathology of dental diseases, but we strongly urge that only in a well-found dental department can the medical student hope to acquire the knowledge that will enable him to diagnose and assess at their disease value the dental conditions which he is bound to encounter in vast numbers in his life's work. And those from whom he gets his instruction should be under no stigma of inferiority.

CAUSATION OF SKELETAL MUSCLE PAIN

It is now generally accepted that ischaemia is the cause of muscular pain, such as occurs in angina pectoris and intermittent claudication, but the immediately responsible factors remain obscure. S. Perlow, P. Markle, and L. N. Katz[1] have conducted experiments on human subjects with a view to determining the underlying factors. They found that the immediate cause of continuous muscular pain, such as occurred when an ischaemic muscle was exercised, was not produced by a single mechanism, but that muscular activity, anoxaemia, circulatory stasis, and possibly other processes contributed to its production. Various degrees of generalized anoxaemias were induced in these subjects by letting the subject breathe from a spirometer containing various mixtures of gases at different times. Arm-clenching and leg-moving exercises were performed, complete ischaemia being brought about by inflating a sphygmomanometer cuff to a pressure considerably above the systolic. Circulatory stasis without complete ischaemia was produced by maintaining a pressure of 80 mm. of mercury in the cuff. The obstruction to the venous outflow led to the accumulation of blood in the limb. The observations consisted primarily in determining the time and circumstances in which continuous pain, as described by Lewis, Pickering, and Rothschild, developed, and the time and conditions under which it disappeared. It was found that exercise with circulatory stasis, but without anoxaemia, failed to produce pain in ten minutes in exercising leg muscles. Pain caused by exercise of both the arm and the leg during complete ischaemia disappeared after a short lag whenever the complete ischaemia was relieved, even if the exercise was continued and circulatory stasis was maintained. It seemed, therefore, that anoxaemia must be severe to become an important element in the production of pain in an exercising muscle during ischaemia. In the experiments, however, general anoxaemia failed to produce pain in ten minutes in the exercising muscles of the leg unless associated with circulatory stasis, extension of the foot being the exercise used. Stasis and anoxaemia were also found to be important in delaying the abatement of pain, even after the exercise had ceased. The authors hold that the pain-producing factor is a chemical substance which is formed during muscular metabolism and continues even while the muscle is at rest, though slowly. It was clearly possible to define a pre-pain stage, when the pain-producing substance was above normal but below the pain-producing threshold. Absence of pain, it is added, does not imply restoration of the muscle to normal.

[1] *Arch. Int. Med.*, June, 1934, p. 814.

NATIONAL INSTITUTE FOR THE DEAF

The development of the National Institute for the Deaf, since its reconstitution ten years ago, has been so rapid that the committee has been compelled to provide more commodious premises for its still expanding work. A fine freehold house, 105, Gower Street, London, W.1, has been secured, and the work of the institute will shortly be transferred thereto from the present offices, 2, Bloomsbury Street, W.C.1. The new premises and the necessary alterations and furnishing will cost approximately £12,000, and for this sum Lord Charnwood and other influential friends are now appealing to those of the public who sympathize with deafness and who desire sufferers from it to be suitably advised and helped. The committee has received some £2,500 of the amount required. A permanent centre of information and advice on deafness and the deaf is a national necessity, and, great as have been the achievements of the Institute in the past, there is no doubt that when it has the advantage of adequate and permanent accommodation its work will be of greater assistance to that large section of humanity whose ears are more or less closed to sound.

We regret to announce the death, at Stockholm, of Mr. W. H. Trethowan, F.R.C.S., orthopaedic surgeon to Guy's Hospital and surgeon to the Royal National Orthopaedic Hospital.

Nova et Vetera

THE HAMPSHIRE BOUNDARY IN THE VICINITY OF BOURNEMOUTH

Whilst those members of the British Medical Association who attended the Annual Meeting this year still have vividly in mind the geography of Bournemouth and the exceedingly interesting *Book of Bournemouth*, edited by the President and presented to us all by the generosity of the Borough Council, it may be useful to amplify slightly the references in Mr. Riddle's admirable historical sketch of the development of the town in early days. Refuting a common notion that the name Bournemouth is a modern innovation, he quotes a State Paper of 1574 which alludes to "Bournemouth, within the Hundred of Westover, adwyning to Dorsetshire." If "adwyning" means "adjoining," it would seem that Bournemouth was regarded as in Hampshire; if it means "adhering," then Dorsetshire claimed the honour. Or again, if someone could explain for us what the Hundred of Westover was, the problem might be solved; but the various ancient maps which I possess do not show the Hundred of Westover at all—they all concur in extending the Hundred of Christchurch right up to the county boundary on the Hampshire side, and the Hundred of Cogdeane on the Dorsetshire side: Camden gives a list of the Hundreds of Hampshire in which Westover is not mentioned. However, Westover Road is very much in evidence in the Bournemouth of to-day, so presumably Westover had a definite existence, whether or not it was recognized as a Hundred.

Mr. Riddle goes on to explain that "Burnemouthe" is shown on a MS. map of Dorset, now in the British Museum, as belonging to that county (in 1575), and says that Tresswell's map of 1586 and the map published with the 1610 edition of Camden's *Britannia* both place the Bourne stream wholly within the county of Dorset. I have not seen Tresswell's map, but I possess the map (by Kip) from the 1610 *Britannia*, and I interpret the cartographer as meaning that the Bourne is, near the sea, the actual boundary between the two counties, not that it is wholly in Dorsetshire. Saxton's map of Hampshire (1575) rather neglects this corner of the county, but it does show an unnamed stream (presumably the Bourne) definitely in Dorsetshire. According to Overton (1600) and Morden (1690), says Mr. Riddle, the stream was taken as the intercounty frontier.

Saxton's surveys were the earliest attempts at the large-scale cartography of England, and for some generations after his time publishers copied him freely; but they did extend his researches on their own account to some degree, and it is interesting to compare the various early delineations of the triangle of land enclosed between the sea front, the county boundary, and the River Stour. John Speed, for instance, in 1610 shows "Bascomb Copperas House" about two-fifths of the distance from "Allom House" (which is placed just on the Hampshire side of the boundary) to Hengistbury Head: copperas, if I remember rightly, is sulphate of iron, and allom is no doubt sulphate of aluminium. Due north of Allom House, and likewise just in Hampshire, a hamlet named Heath is shown; Iforde is duly, and fairly correctly, sited, and so is Holmhurst (now Holdenhurst). Longham is placed on the Dorsetshire side of the line and is thus spelt: in the Camden map of 1610 (itself a reprint of the original of 1607) it is also on the Dorset side, spelt Langham. Both show Perley well inside Hampshire, spelt Parlieu in Speed and Palieu in Camden; but oddly enough both authorities in their *Dorsetshire* maps place it in the identical situation but spell it in the modern way. Another anomaly shared by both these atlases is that they correctly place Preston in Dorsetshire in their maps of that county, but incorrectly include it in Hampshire when mapping the latter. These strange and identical blunders probably imply that they both copied some earlier authority (not Saxton, by the way); yet in some particulars they vary from each other noticeably. Thus Camden's mapmaker (John Norden in the case of Hampshire) gives Allom Copperas House, compared with Allom House in Speed, and he spells Boscombe "Boscambe," which is nearer to the modern spelling than Speed's version. He shows Burne mouth as two separate words (on the Dorset map in this case); between that place and Parkston he places "The mynes," presumably the iron deposits, or else the alum workings, which Speed also shows.

The great Amsterdam firm of the Blaeus evidently trusted to the English cartographers for this corner of Hampshire. They copy Speed with exactness, spelling Perley "Parlieu" as he does; placing Allom House just on the Hants side of the border, with Heath due north of it; and Preston also on the wrong side of the county line. Whether the Blaeus sited Preston properly on their Dorsetshire map—as Speed and Norden did—I am unable to say, as I have only their Hampshire map before me. It is, however, clear that they copied Speed, not Norden. Thus, they follow Speed in regard to Iford, which Norden calls Iverbridge—Iver being, no doubt, a phonetic spelling of Iford. They also place Heath in the exact position that Speed does, whereas Saxton and Norden omit it altogether. Is this hamlet, I wonder, the district now called Highmoor?

I ought to add that, as those who have read the *Book of Bournemouth* know, the whole town is nowadays in Hampshire; but at what date the boundary was redrawn I am unable to say, and Mr. Riddle does not tell us, though I feel quite sure that he knows. H. R.

England and Wales

Bequest to Oxford University

A large sum of money—£30,000—has been left by Mrs. Mary Jane Williams of Witley, Surrey, to the Chancellor, masters, and scholars of the University of Oxford, to be expended in the promotion of Oxford medical education. The benefactress, who was the widow of Charles Theodore Williams, M.D., F.R.C.P., consulting physician to the Brompton Hospital, died on July 24th. Her husband died in 1912. A further £5,000 is left to the Royal College of Physicians of London, to be devoted to the exercise of hospitality and to the maintenance of the dignity of the College. Other legatees are the Master and Fellows of Pembroke College, Oxford, "in token of my husband's great affection for and desire to assist the college, of which he was an honorary fellow, to found fellowships and scholarships, or for building or endowments, or in other ways to promote the prosperity of the college which was dear to him." Sums of £100 each are bequeathed to the London Society for Women's Service, to the Medical Society of London, and to the Royal Meteorological Society. An Oxford correspondent writes: Pembroke College—originally Broadgates Hall—was founded in 1624 by James I. Dr. Thomas Clayton, Regius Professor of Medicine, was the last Principal of Broadgates Hall and became Pembroke's first Master. The college still preserves some relics of Samuel Johnson, who entered it in 1728.

Institute of Medical Psychology

Post-graduate courses in psychotherapeutic theory and method for members of the medical profession will begin on October 1st at the Institute of Medical Psychology (the Tavistock Clinic). During the first five weeks there will be ten introductory lectures, after which the main course, covering a year's work, will be arranged to suit alternate groups of those aiming at specialization and those able to devote only a more limited amount of time to the subject. Fees range from two guineas for the introductory course to £60 for the "specialist" course. Full particulars can be obtained from the honorary lecture secretary, Institute of Medical Psychology, Malet Place, W.C.1.

Lectures on sectional or more popular lines have also been arranged for doctors, nurses, educational and social workers, the clergy, and the general public. One series will deal with "Psychology and Modern Problems," the lecturers including the new Dean of St. Paul's (Dr. W. R. Matthews), Professor C. G. Seligman, Professor Morris Ginsberg, Professor J. C. Flugel, and Dr. H. Crichton-Miller.

Scotland

Health and Housing

The sixtieth annual Congress of the Royal Sanitary Association of Scotland was held last week in the Albert Halls, Stirling. Mr. A. W. Ritchie, chief sanitary inspector, Edinburgh, in his presidential address, said that the housing conditions existing at the middle of last century were part of the unhappy consequences of the industrial revolution, which caused great numbers of people to flock into larger centres to find employment in the mills. These old buildings were erected with no regard for arrangement or for the most elementary sanitary requirements. As a consequence the death rate in 1876 was 20.9 per 1,000 of the population, as contrasted with 13.2 in 1933. The modern tendency in housing was towards simplification and economy without loss of security. Concerning sewage disposal, he said that remarkable developments had taken place in purification works, but it was regrettable that so many rivers still remained grossly polluted. Inquiries in this connexion, however, were being conducted by the Department of Health. The results following the transfer of slum dwellers to clearance areas had demonstrated beyond a doubt that improved environment was a very important factor in the furtherance of health and happiness. It was a mistake to suppose that these persons reduced their new dwellings to a level with the old ; the proportion who failed to respond to the new surroundings was not more than 4 or 5 per cent.

Campaign against Tuberculosis

At the meeting on September 13th a resolution was unanimously adopted calling upon the Government to introduce legislation in the forthcoming Housing Bill for the rehousing of families in which tuberculosis was present. In the long discussion which followed on the campaign against tuberculosis, Councillor Mrs. Mann said medical opinion agreed that too much money was being spent on the treatment of tuberculosis and the development of sanatoria, and too little on housing with the same objective. In Glasgow, where £500,000 had been spent on the prevention and cure of tuberculosis, patients were brought back from sanatoria to sleep in one-apartment houses with six, seven, or eight other persons. It was an anomaly that thousands of slum dwellers might be removed and qualify for the grant of £2 10s. per head, but not even two tuberculous patients from an overcrowded area could be removed to obtain this grant, because there was no Act under which this could be effected. Dr. R. J. Peters, senior assistant medical officer of health in Glasgow, said that tuberculosis of bovine origin was a serious matter, but the type of infection which took origin in the human subject was more serious still. Science had put into their hands knowledge of the means of prevention of bovine tuberculosis, and it seemed strange that the lives of children were still being menaced by this disease. During the past twenty years much had been expended upon the control of tuberculosis. In England over £3,000,000 of public money was spent annually in this cause. In Glasgow the amount spent was relatively higher ; on an average each case of tuberculosis cost the ratepayers of that city about £100 for treatment and supervision. Newer methods of treatment of pulmonary tuberculosis had altered the views of clinical officers on the question of admission to hospital, and the improvement in social conditions had rendered the need for extensive isolation less urgent than before. The sanatorium and the local authority hospital had had one drawback in an unfortunate measure of divorcement between tuberculosis and general medicine. Those who were occupied with tuberculosis work did not come into contact with workers in other fields of medicine as freely as they should, but this could to some extent be remedied by allowing a few cases to pass through the voluntary general hospitals. Dr. J. P. Dunn, medical officer of health for Dumfries, pointed out that although the incidence of tuberculosis was declining, it was still killing 30,000 people every year, and costing the nation over £2,000,000 in residential treatment alone. In Britain every year 2,000 children died from infection with bovine tuberculosis, and some 4,000 suffered permanent crippling. Major J. G. McGregor, county veterinary officer, Stirlingshire, said that the incidence of bovine tuberculosis among milk cows was very high, for at least 40 per cent. of all the dairy cows in the area of the Scottish Milk Marketing Board would react to the tuberculin test. The number, however, that excreted tubercle bacilli in their milk was small ; it was estimated that only about 0.5 per cent. of cows yielded tuberculous milk. The incidence of tuberculous infection in raw milk had been found to be in the neighbourhood of 10 per cent. of samples, but Certified and Grade A (T.T.) milk had been shown, in an investigation by the Department of Health, to be practically safe. Pasteurization of all other milk had been suggested as a solution of the problem, and the Medical Research Council had come to the conclusion that if this was properly carried out it had no seriously damaging effect upon the nutritive qualities of the milk. Mr. W. Y. Park, sanitary inspector, Rutherglen, speaking of the conditions which favoured the onset of tuberculosis, mentioned, in addition to poor housing conditions and infected milk supply, the atmospheric pollution of towns. There was no law against domestic smoke, and yet three-fourths of the total atmospheric pollution was due to the house chimney. In the opinion of Dr. McMichael, Paisley, there was a clear necessity for a definite policy on the question of housing tuberculous families in industrial areas. Investigation during the last five years into the sleeping accommodation of 754 tuberculous persons showed that 63 per cent. shared a bed, 21 per cent. occupied a bed alone but shared a room, and only 15 per cent. were the sole occupants of a room. In the light of such conditions the local authority of Paisley had some years ago decided to make a special effort, and had rehoused 182 tuberculous families, or 20.9 per cent. of all the cases on its register.

Mental Health Services

On September 14th a discussion was introduced by Professor D. K. Henderson, physician-superintendent of the Royal Edinburgh Mental Hospital, upon a modern mental health service. He said that the maintenance of mental health in the community was one of the greatest outstanding problems. This problem was concerned with several well-defined groups, including: (1) the mentally disordered, who spent part of their lives in mental hospitals ; (2) the mentally defective, of whom many remained in institutions throughout life ; (3) the delinquent and criminal, of whom a number suffered from mental disorder, while others required investigation to fit them for social life ; (4) the border-line psychoneurotics who might be

dissatisfied, hysterical, neurotic, or anxious, and were in need of help and treatment ; (5) unsatisfactory individuals who were social misfits, including drug addicts, alcoholics, prostitutes, and many of the unemployable. In England and Wales there were about 150,000 mentally disordered persons, with 20,000 more in Scotland, while mental defectives approximated to 8.56 per 1,000 of the population. In London about one person out of 200 was mentally deranged, and one person out of 274 was a mental defective. In Scotland, according to the General Board of Control, since 1858 the number of insane persons had increased by 235 per cent., while the population had increased by only 62 per cent. These figures were bad enough, but they would be still more appalling if they included all those seriously disordered persons who were maintained outside institutions, but who would benefit by greater supervision. Yet great advances in control had been made, and in Great Britain the mental hospitals caring for both rate-aided and private patients were second to none. Alarmists raised a cry for some all-embracing destructive policy which would solve the problem at one swoop. Such a policy was unthinkable and contrary to humanitarian instincts, and was dominated by fear. The continued policy of building more and larger institutions was also something which should be obviated. There must be a limit to segregation combined with training and employment, and the matter must be met on a wider and more constructive basis. While sterilization might be adopted in individual cases, its usefulness was more individual than racial, and there were so many pitfalls and complexities associated with it and so many cogent arguments against it that its use would be extremely limited. A positive eugenic policy, on the other hand, was an attempt to increase the number of children above medium intelligence by encouraging the growth and development of healthy families. To obviate the economic aspects of this, a scheme of family allowances had been suggested whereby parents should receive financial support for healthy children. To-day provision was made for the unemployed and unemployable, while little or nothing was done for the people on whom the welfare of the nation depended. In the meantime they must apply themselves to the study and treatment of those who were unable to adjust themselves to the artificial standards of society. Most of the trouble started in the cradle and the nursery long before school age. If the difficulties of nervous, highly strung, sensitive, and wayward children, who were socially unable to form satisfactory adaptations, were not corrected in childhood, they would never be corrected at all. Efforts should be made at this formative period to pluck out the roots of budding trouble by the co-operation of parents, teachers, ministers, social workers, school medical officers, and specialists. Many clinics for this purpose were in existence, and the speaker would like to see these co-ordinated and extended ; at present there were too many working independently and covering much the same ground. The clinics dealing with the nervous and mental health of the child might well be grouped at the children's hospitals. Every mental hospital in the country ought to organize in its county town or other centre an out-patient clinic to which patients could have easy access. Further, a psychiatrist should be attached to juvenile courts ; he might be helpful to many early offenders. Psychiatric clinics should be established, which would provide indoor and outdoor treatment for patients who needed careful observation and treatment, but who were not yet so seriously involved as to require the aid of a mental hospital. Dr. W. McAlister, medical superintendent of Bangour Village Asylum, referred to the fact that this was the first occasion on which the Sanitary Congress had had a discussion on mental health. He congratulated the association on lifting its eyes from the dismal subject of drains to the more salubrious subject of brains, for in doing so it was coming into line with the great mass of the public whose conscience had been roused in this matter. In the last twenty-five years there had been a partial revolution against the ravages of mental disease. Local authorities, however, had not sufficiently taken advantage of existing legislation, for the Mental Deficiency Act of 1913 called upon them to ascertain the mental defectives within their own area, to arrange for special schooling for those who could profit by it, to provide institutional care for those who required it, and to assume control over defectives who were at large in the community. In Scotland in some counties the number of mental defectives had not yet been ascertained, and therefore the other three demands could not be fulfilled. He believed also that the medical profession was to blame, for they had allowed themselves to continue working under old traditions instead of stepping in at the early nervous stage and dealing with matters during formative years. Much research was required in mental disease which ought to be organized on a national scale. The key to the whole situation lay in the child, and all schools of psychology were now agreed on the supreme importance of early years. Dr. William Boyd, medical superintendent of Fife District Asylum, stated that the present fast pace of life was leading to a greater development of mental troubles. The Lunacy Act required to be altered in the direction of making asylums more of the nature of hospitals, and of removing the difference between pauper patients and others. Dr. Macgregor, medical officer of health for Glasgow, said that in regard to eugenics they must have more facts and more information. In Glasgow special wards were being created in the general hospitals which really amounted to psychiatric units, where, in addition to a study of early cases of mental disorder, all the medical and surgical skill in the institution was available. He believed this was the proper line on which such psychiatric units should develop.

Reports of Societies

ACUTE STREPTOCOCCAL THROAT INFECTIONS

On September 15th, in connexion with the two-day jubilee celebration of the Medical Officers of Schools Association held at Eastbourne, by invitation of the Mayor and Corporation and the Local Head Masters' Association, and under the presidency of Dr. J. A. H. BRINCKER, a paper (contributed conjointly by himself and Dr. FRED GRIFFITH) was read at the Town Hall by Dr. J. ALISON GLOVER, Senior Medical Officer, Board of Education, on "Acute Streptococcal Throat Infections."

Dr. Glover said that this subject was of perennial importance to both head master and school medical officer, as these infections of the throat constituted a continual source of anxiety. The most prevalent streptococcal disorder met with in schools was acute tonsillitis: it was both endemic and epidemic, and had an incubation period of two to four days. Its main incidence occurred at puberty, and while it was sometimes conveyed either by drinking milk or by the common use of tableware, handkerchiefs, or pencils, droplet infection was the usual method of transmission in schools. With the exception of the Klebs-Loeffler bacillus, the almost invariable causal organism in sore throat was the haemolytic streptococcus (*S. pyogenes*). The attack rate varied. It was 2.7 per cent. annually (1932) in the Royal Navy ; at Guy's Hospital, taken over a series of years, 6.7 per cent. of those attending the casualty department for the first time came on account of it ; while Captain Dudley found an attack rate of 4.8 per cent. per term at the Royal Hospital School, Greenwich. Its seriousness was largely derived from the various complications which might ensue, such as otitis media, mastoiditis, meningitis, septicaemia, and pneumonia, and, more rarely, acute rheumatism and

nephritis. It was also liable to be coincident with measles outbreaks. It had long been recognized that cases of tonsillitis without rash occurred during epidemics of scarlatina side by side with cases which exhibited the rash fully developed. Mantle, in 1887, pointed out the close alliance of the conditions found in sore throat epidemics and those present in cases of scarlatina, and this was confirmed by the serological work of Dr. F. Griffith, the collaborator in this paper.

Haemolytic streptococci in the throat produced varying clinical pictures in different persons, and these differences might be seen in boys in the same dormitory. In one boy there might be a feverish pharyngitis, in another tonsillitis, in a third scarlet fever, while another would be a healthy carrier. *S. pyogenes* had been found in varying proportions in all communities examined, the percentage varying with season and hygienic surroundings. During school epidemics the "healthy" carrier rate might be very high. Certain serological types of this *pyogenes* group seemed specially equipped to produce the complete scarlatinal syndrome. Dr. Glover said that members of the profession as well as the laity were still inclined to view an epidemic of scarlet fever as no more than a number of cases of a well-defined clinical type, devoting their energies to tracing the spread from case to case, in the belief that the isolation of all suspected cases would stay the progress of the epidemic. Sometimes results seemed to justify this attitude, but often the matter proved to be much more complex, particularly in cases in which the toxigenicity of the infecting strain was low and when part of the school population was Dick-immune. In such outbreaks as these the epidemic could be called a carrier epidemic. By diagrams Dr. Glover explained the epidemiology of streptococcal epidemics in nine schools, correlating the clinical and epidemiological features with Dr. Griffith's serological findings of the infecting types of streptococcus.

Otitis media caused school doctors much anxiety; mostly it was a sequel following tonsillitis, influenza, scarlet fever, or measles. It was probable that at least three-fifths of the cases of otitis media occurring in schools were due to haemolytic streptococci.

Dr. Glover proceeded to consider the importance of the dormitory as a factor in the spread of these epidemics. While the incidence of tonsillitis, measles, and influenza during the four years 1930–33 inclusive was substantially the same for boys and for girls in well-to-do public boarding schools—that is, in the cases investigated during the inquiry by the Medical Research Council into epidemics in schools—the incidence of serious complications due to streptococci and pneumococci was found to be significantly lower in the case of girls. Among the causes suggested to account for this difference were: the greater care given to girls, their superior discretion when ill and greater watchfulness over their health, and their better nutrition. Dr. Glover considered, however, that the main cause for the better figures in regard to girls was that the latter slept in large and well-ventilated cubicles, whilst most boys, on the other hand, slept in dormitories, many of them of somewhat antique design. The speaker, though a strong advocate of pure water for baths, did not attribute great importance to swimming as a factor in the production of otitis media in schools, as by far the highest incidence of ear trouble occurred in the Lent term, when there was but little swimming. In the well-nurtured children in public schools acute rheumatism was a less common complication of tonsillitis than was otitis media. For the production of acute rheumatism some further, at present unknown, factor seemed to be needed in addition to infection by haemolytic streptococci; it was possible that this factor was some kind of vitamin deficiency.

Dealing finally with the question of prevention, Dr. Glover said that the occurrence of epidemics of tonsillitis in schools generally indicated the existence of unsatisfactory conditions in regard to hygiene, either in the school itself or in the sick-room or sanatorium. When these epidemics occurred there was usually a high carrier rate of haemolytic streptococci, and there was usually also some reason to suspect that the environmental conditions were such as to facilitate the transmission of the infection. In most of these epidemics the infection was wafted in droplet form from one nasopharynx to another, in either dormitory, classroom, common room, changing-room, dining-room, tuck-shop, or chapel. Of these, the dormitory seemed to be the most important, for here the proximity of boy to boy was uninterrupted for several hours continuously, aided by closed doors and, in bad weather, many closed windows. During the last twenty years the Board of Education had laid down for observance in schools certain excellent minima. It required that for dormitories there should be a space of at least three feet between beds, a floor area per bed of not less than 65 square feet, and a cubic space of not less than 700 cubic feet per bed. Ventilation must be adequate and "through," by arranging windows on the opposite sides of a room. In the case of cubicles, if partitions were not carried to the ceiling there should be an allowance of 65 square feet and 700 cubic feet. When partitions were carried to the ceiling the figure should be 100 square feet and 1,000 cubic feet respectively. He said it was especially important to avoid overcrowding the sanatorium when an epidemic occurred; patients in such an event should have their beds separated by certainly not less than six feet.

Dr. Glover's reference to prophylactic immunization was omitted owing to pressure of time.

DISCUSSION

The PRESIDENT said there were a number of aspects of this question apart from the bacteriological. The school medical officer had to deal with these cases from the beginning; his was the anxiety, and he had to satisfy parents that everything possible was being done for their boys. The point of view of the general practitioner also had to be considered.

Dr. L. R. LEMPRIERE (Haileybury) emphasized the point that at the time of epidemic outbreaks it became for the school medical officer a matter of personal activity on the right lines. These septic sore throats had always been a cause of anxiety, and his observation gave him the view that these school visitations were recently on the increase. How to prevent these cases did not yet seem clear, especially as there appeared to be different types of causal organism. There had been a great improvement in the general hygiene of school premises; especially was that so in county council schools in the last forty years. He regretted there did not seem to be much improvement in the personal hygiene of the average public school boy; what had happened in regard to the school girl he was not in a position to say. The nose of the usual boy was a "cesspool." In comparison with tonsillitis there had been a small development of scarlet fever. He had long thought that the worst throat epidemics were in schools which were built on a clay soil.

Mr. THORNTON (Mayor of Eastbourne) said he was particularly interested in the question of possible harm from bathing, especially as a cause of ear disease. Dr. Willoughby had been instrumental in placing the Eastbourne bathing establishments on a satisfactory basis. His own view, as a schoolmaster, was that bathing had something to do with the causation of otitis media, especially sea bathing. It was probably largely due to boys jumping into the water feet foremost; accordingly he always urged boys to pinch their nose to keep out the water, and this was found to be a valuable deterrent. Gargling every morning was also a great advantage. Dr. LILIAS JEFFRIES was of opinion that bathing was responsible for some cases of otitis media. She was an advocate of the cubicle system for sleeping, though she had no figures to show a greater freedom from nasopharyngeal disease under that system as compared with dormitories. She was sure many school dormitories were imperfectly ventilated. She also strongly felt that sufficient stress was not always laid on having all milk consumed in schools pasteurized.

Dr. W. G. WILLOUGHBY (Eastbourne) said his view agreed with that of Dr. Lempriere that these streptococcal throat epidemics were on the increase in schools, especially since the war. On the other hand, the scarlet

fever now seen was certainly less severe than formerly. He stressed the need in dormitories and classrooms of having the air frequently renewed; the window space should be, in his view, one-tenth of the total floor space, and it should be possible to open half of every window. While agreeing with a daily throat gargle, he did not favour nasal syringing as a routine, owing to the delicacy of the nasal mucous membranes. In Eastbourne the policy of isolation of every suspected case of scarlet fever had been most successful. It would be a great boon to have for use a preventive serum for inoculation against the haemolytic streptococcus.

Dr. W. H. BRADLEY (Downshire School) said his experience had convinced him that overcrowding was the most important factor in the spread of streptococcal diseases. In one school of which he had knowledge its population was reduced from 340 to 220, and the result of the generous spacing this gave to each boy was that the medical officer had little to do. Owing to the variety of the clinical pictures produced in these epidemics he urged continual watchfulness and study on the part of the school medical officer. Dr. E. H. R. HARRIES (N.E. Fever Hospital) said that the throats of a large number of admissions to his hospital yielded a pure culture of haemolytic streptococcus, and he advocated early testing for this as a quick diagnostic measure, as the haemolysis was soon evident to the naked eye. The use of scarlet fever antitoxin should be general, even in mild cases; it certainly reduced the complication rate.

Dr. E. K. LE FLEMING said the great problem awaiting solution was as to how resistance to the streptococcus was lost, and how it could best be regained. Overcrowding he placed first among the causes favouring the spread of these epidemics in schools, and he thought that if open-air dormitories were universal quite 90 per cent. of these troubles would be solved, though admittedly both parents and head masters would first need to be educated as to the benefit of the measure. He asked that a disease chart might be drawn up for use in schools; perhaps the Association would collaborate with the Ministry of Health to this end. Dr. R. E. SMITH (Rugby School) thought parents should be told that much could be done to prevent scarlet fever epidemics; many young boys had not become immunized to the disease before being sent to the public school, and the speaker thought parents should have this done before sending their sons to school. Dr. W. ATTLEE (Eton) pointed out that separate sleeping rooms was the rule at Eton, and there not more than two or three cases of haemolytic streptococcus throat trouble were seen at a time; there was no spread in epidemic form. If more thorough ventilation of schools were carried out improved heating should be an accompaniment.

MEDICAL WOMEN'S INTERNATIONAL ASSOCIATION

The third quinquennial congress of the Medical Women's International Association was held this year in Stockholm from August 7th to 12th, by invitation of the Swedish Medical Women's Association. The meeting was preceded by a three-day visit to Copenhagen, where members of the congress were entertained by the Danish Association, and was followed by a visit to Helsingfors, by invitation of the medical women of Finland. Official delegates were present representing seventeen different countries, including fifty-three members from Great Britain and thirty-three from the United States. There were also representatives from Japan and India, as well as from the principal European countries. The total attendance exceeded two hundred. At the scientific sessions the subjects for discussion were: (1) The effects of physical education on the development, structure, and functions of the female body; (2) birth control.

The *rapporteurs généraux* for the first question were Dr. Bertha van Hoosen (U.S.A.), Dr. Lolhoffel-Lowensprung (Germany), and Dr. Lofja Zabawska (Poland). For the second question they were Dr. Alma Sundquist (Sweden), Professor Dame Louise McIlroy (Great Britain), and Dr. Dewetterova (Czechoslovakia). Their reports were based on replies to questionaries sent out to medical women with special experience in the subjects involved, each *rapporteur* dealing with those from a group of countries. The *rapporteurs* summarized the findings contained in their reports, which had previously been circulated. Writers of papers were asked to speak briefly, and the questions were then opened for public discussion. Both subjects aroused a great deal of interest.

In regard to the question of physical education for women there was remarkable unanimity of opinion as to its value. The alleged risks and dangers were shown to have little or no foundation in fact, and the favourable influence of exercise on menstruation was generally accepted. A resolution was passed by the whole association to the effect that the International Medical Women's Association regarded the scientific research and control of physical education for women, carried out in collaboration with teachers of physical education and the various organizations for sport and physical education, as one of its most important duties.

As to birth control there was of necessity considerable difference of opinion. In the Roman Catholic countries of Europe birth control, except for strictly medical reasons, is not permitted, whereas in certain other countries it is recognized and even encouraged by the State for eugenic and even economic and social reasons. Other countries, again, stand in an intermediate position. The discussion ranged from questions of principle to the details of contraceptive measures, and in spite of the inevitable differences in point of view it was extremely friendly, and pursued in the true spirit of scientific inquiry. It was decided that at this juncture it would be inadvisable to formulate any general resolution, but the council wished it to be put on record that it was satisfied that the discussion had been of international value from a scientific point of view.

It was resolved that the next congress should be held in July, 1937. The subjects chosen for discussion on that occasion were: (1) cancer in women, and (2) maternal mortality. It was decided that the international secretariat should remain in Paris for the next three-year period. Dr. Alma Sundquist was elected president, Mme. Montreuil-Straus (France) was re-elected honorary secretary, and Miss Louisa Martindale, formerly president of the British Medical Women's Federation and vice-president of the International Medical Women's Association (Great Britain), was elected honorary treasurer. The six international vice-presidents were Mme. Dr. Thuillier-Landry, ex-president (France), Mme. Dr. Bauer (Austria), Dr. Dagny Bagne (Norway), Dr. Doris Odlum (Great Britain), Dr. Taylor Jones (U.S.A.), and Dr. Margaret Balfour (India).

The inaugural meeting of the congress was addressed by Herr Gustav Moller (Minister of Social Affairs), Herr Torsten Nothin (Governor-General of the City of Stockholm), and Herr Dr. Nils Hellstrom (Chief of the Royal Medical Board). The members of the congress were most hospitably entertained at Stockholm, Copenhagen, and Helsingfors. In all the three countries the fullest opportunities were afforded for visiting the principal hospitals and institutions, and the extremely modern and well-equipped hospitals and social organizations afforded great interest and instruction. Since Finland has become an independent country she has made enormous strides in her medical and social services, and her modern hospitals are among the best in Europe. The beautiful cities, with their fine public buildings, extremely modern in type, and the warm hospitality which they received will make the congress a memorable one for all those who were fortunate enough to take part in it.

The report dealing with the last Remembrance Day appeal for Earl Haig's Fund shows that £511,853 was contributed on Poppy Day, 1933—an increase of nearly £30,000 over the figure for the previous year. Many committees throughout the country have already started their work of local organization for the 1934 Remembrance Day appeal, which this year will be made on Saturday, November 10th.

CORRESPONDENCE

Stanley Melville Memorial

SIR,—The dangers of *x*-ray work were brought home vividly to the medical world by the death of several of our pioneer radiologists. In 1921 a letter to the *Times* announced the formation of a special committee to advise on these dangers. In this action the late Dr. Stanley Melville played a very prominent part. This *X*-Ray and Radium Protection Committee was the first in the world to draw up recommendations for safeguarding those who work with these agents. Their value may be gauged by the fact that they formed the basis of the recommendations adopted at the Stockholm International Radiological Congress in 1928.

Dr. Stanley Melville took a most important but unobtrusive part in all that concerned medical radiology. He was one of those who worked for the establishment of the Diploma in Medical Radiology and Electrology (D.M.R.E.) at Cambridge in 1919, and subsequently the teaching and examinations connected with it were his constant care. The bilingual congress of 1922 and the First International Congress of Radiology in London in 1925 were largely due to his initiative, as was also the formation of the British Institute of Radiology, with which the Röntgen Society was eventually incorporated. He did much for the welfare of the lay worker, and took a prominent part in founding the Society of Radiographers. Sadly handicapped physically, and often suffering as the result of dermatitis incurred in the early days, Melville never spared himself when any work for medical radiology had to be done; that he should be ever ready to step into the breach seemed to be the natural course of events.

Some of your readers may feel that his services should be recognized and perpetuated by a suitable memorial, such as a travelling fellowship in radiology. Donations, however small, for the purpose will be gratefully acknowledged. At a later date a meeting of those subscribing to the fund will be called in order to decide what form the memorial shall take and how the funds subscribed shall be administered.—We are, etc.,

HUMPHRY ROLLESTON (*Chairman*).
RUTHERFORD (Cambridge).
L. S. T. BURRELL (Brompton Hospital).
G. W. C. KAYE (National Physical Laboratory).
G. W. MITCHELL (St. George's Hospital).
R. S. PATERSON (Radiology Section, Royal Society of Medicine).
LEO. A. ROWDEN (Society of Radiographers).
SIDNEY RUSS (British *X*-Ray and Radium Protection Committee).
J. DUNCAN WHITE } (British Institute of Radiology)
A. E. BARCLAY } (*Honorary Secretaries*).

32, Welbeck Street, W.1, Sept. 14th.

Preliminary Ligature in Toxic Goitre

SIR,—It is clear from the correspondence in the *Journal* of June 30th, July 14th, 21st, and 28th, that there is a considerable divergence of opinion on the advisability of preliminary ligature in cases of toxic goitre. While Sir Thomas Dunhill, Professor Wilkie, and Mr. Geoffrey Keynes favour the ligature procedure, Mr. Cecil A. Joll takes a much more guarded view.

It will be agreed that the best means to ensure a low mortality is to leave so little thyroid tissue that severe post-operative reactions cannot occur, and this involves removal of about seven-eighths of the gland in the majority of cases. In the very toxic patients, although it may be unwise to carry out this operation in the one stage, I think, nevertheless, that at least a large portion of one lobe should be removed under these circumstances, and the post-operative reaction will depend, to a great extent, on how much thyroid is left behind. I believe that the ligature operation cannot be relied upon to reduce to any great extent the amount of active gland, and for this reason the first stage of the operation in a very toxic case should include more than simple ligation of the vessels.

That these views are not without support is evident from a study of the literature on the subject. H. M. Richter, in *Surgery, Gynecology and Obstetrics* (vol. xlix, p. 67), reports a series of 500 consecutive cases of toxic goitre subjected to operation with one death only. He is of the opinion that preliminary ligation should *not* be done, and aims at carrying out the operation in one stage only. A series of cases so successfully dealt with cannot be ignored. Again, Greene and Mora (ibid., 1931, vol. liii) report 1,025 consecutive thyroidectomies for toxic goitre in one-stage operations with a mortality of 0.29 per cent., and also a series of twenty-six cases in children in which a one-stage operation was performed with no deaths. The preliminary ligation method is not practised by them. F. H. Lahey, in the *New England Journal of Medicine* (1929, p. 909), basing his views on over 4,000 cases of toxic goitre, makes the following statement:

"Due to the preliminary use of iodine, multiple stage operations which we have previously advocated have markedly diminished in number, and when done are now limited at the most to a two-stage procedure, the partial removal of one lobe, the patient returning to hospital at the end of six weeks for the partial removal of the remaining lobe."

In 1924 fifty-seven operations for preliminary ligature were carried out in the Lahey clinic, but since then the operation is no longer regarded with favour, and in 1928, although there were 618 operations for toxic goitre, in no case was preliminary ligation considered advisable, and yet there was only one death in this group. In this country W. H. C. Romanis (*British Medical Journal*, January 21st, 1933, p. 87), reporting on 900 cases with a mortality of 2.5 per cent., recommends a two-stage operation, if the patient is exceedingly ill, in which one lobe is removed on the first occasion and part of the remaining lobe later. He does not support the operation of preliminary ligation.

Mr. Cecil A. Joll very rightly points out that:

"it must not be forgotten that, minor operation as it is, preliminary ligation has an appreciable mortality, and there is by no means a negligible minority in which the operation either aggravates the progress of the disease, or at any rate entirely fails to check it."

The risks are illustrated in an article by H. L. Wallace and L. B. Wevill in the *Edinburgh Medical Journal* (December, 1933), who report fourteen cases of preliminary ligation with three deaths, two of which occurred in severe cases and one in a mild case, death being due in this case to haemolytic jaundice. Mr. Geoffrey Keynes, although an exponent of the operation, used preliminary ligation in only eight of his series of 220 cases of toxic goitre. One of this group of eight died; he gives details of four of the remaining seven cases in his article of May 12th on "Avertin Narcosis," and certainly in two considerable improvement took place within a few days of the operation. This happy result was not experienced with the other two, one of whom barely survived the reaction following the operation, and the other, in spite of ligature of all four thyroid arteries, remained in a very serious condition with no improvement. In both of these cases it is interesting to note that, although the patients had in no way benefited by ligation and were very gravely ill, yet both these cases responded very satisfactorily to a two-stage operation consisting of removal of one lobe

of the thyroid, followed later by removal of part of the remaining lobe. Thus of Mr. Keynes's eight cases, five were benefited by the operation, one died, and two received no benefit whatever, but nevertheless were later very successfully dealt with by excision of part of the gland.

In conclusion, I think there is good evidence to show that the more direct method of dealing with these cases by removal of at least a portion of the thyroid gland, should a two-stage operation be necessary, can be carried out with an extremely low mortality, and that preliminary ligation is a procedure which is associated with a grave risk in return for an uncertain result. I regret that Dr. Cunningham and I did not make it clear in our letter in the *Journal* of June 30th that in adult patients permission for operation is obtained during the early stages of the preliminary medical treatment, but that, once obtained, the subject is not discussed with the patient again, so as to avoid, as far as possible, unnecessary worry on his part. We are, of course, in agreement with Dr. Harold Cookson when he points out that it is illegal to operate without permission on a patient under 21 years of age unless certified insane. In Taylor's *Principles of Medical Jurisprudence* (eighth edition, vol. i, p. 109) it is stated that "no surgeon has a right to perform any operation against the will of the patient as long as the patient preserves consciousness and will." Possibly in some cases of very toxic goitre the terms "consciousness and will" might reasonably be interpreted to allow of an operation being performed without the patient's consent if the relatives are willing, but so far we have always obtained the patient's consent.—I am, etc.,

Liverpool, Sept. 13th. PHILIP HAWE, Ch.M., F.R.C.S.

Medical Education

Training for the Specialties

SIR,—Many thinking practitioners will find themselves heartily in agreement with the views expressed by Mr. Keith Monsarrat in your issue of September 8th (p. 486) and hope that further consideration may induce the powers that be to adopt his scheme rather than that which found favour with the majority of the Committee on Medical Education.

But if it is desirable that the medical graduate should have the benefit of a period of responsible clinical experience before taking up the duties of public practice I submit that it is almost equally important that no graduate should be permitted to embark on specialist and consultant practice without previous experience in general practice. My own observation and experience lead me to think that there are far too many so-called specialists for the health of the specialties and, it may be, also for the health of the public generally. Most men of experience will agree that it is impossible to deal adequately with any pathological condition of specific organs without consideration of the general health of the patient, and that the object of treatment should be directed to the patient suffering from the disease and not the morbid condition of one organ as though it were the only or even the chief consideration. The necessary experience can only be obtained in general practice, and it would, I believe, be greatly to the advantage of both our profession and our patients if some regulation could be devised to prevent anyone taking up a specialty until he had spent three years at least in an ordinary family practice. It might perhaps be made a condition for the M.R.C.P. or the F.R.C.S.

At present it seems as though any bright lad who has won a prize or two in his student career thinks himself too good for general practice either through his own vanity or the flattery of foolish relatives or friends. One parent told me that he would not let his son become a doctor unless he could be a specialist. Such an outlook indicates that the object in view is to make money and secure a good social position, which is perhaps not infrequently the incentive rather than to "scorn delights, and live laborious days." Of course, I do not for a moment suggest that there are not examples of the latter outlook, and brilliant ones too, among the ranks of specialists, but the holders of the former point of view will never achieve the highest satisfaction that the practice of medicine can give.

It would be possible to adduce many more forcible arguments in support of my thesis, but they are more suitable for discussion *in camera* than in the Press. Many of the problems which faced the Central Ethical Committee in drawing up rules for consultation would not arise if some such regulation of specialism as I have indicated could be put into practice.—I am, etc.,

Derbyshire, Sept. 16th. AN OLD GRADUATE.

B. coli Infections

SIR,—Professor Murray Lyon in his address (*British Medical Journal*, September 8th, p. 455) has dealt in a masterly way with this subject of everyday importance. His references to modern thought on this matter are very stimulating, but at the same time the views he has described would appear to be conflicting.

1. "The bile, though alkaline, is an excellent culture medium for the colon bacillus and similar organisms."

Why should the colon bacillus flourish in this alkaline medium when the best measures for eradicating it are massive doses of alkalis?

2. "Hurst has pointed out that where achlorhydria is present the contents of the duodenum are more alkaline—a condition favouring the growth of organisms."

And yet we give large doses of alkali to inhibit this growth! It would appear that the colon bacillus flourishes in an alkaline state of the bowel, but prefers a highly acid state of the urine.

3. "Excess fat in the diet favours penetration of the bowel wall by organisms; butter and eggs are therefore usually restricted."

Wherein, then, lies the value of a ketogenic diet, which contains large quantities of fat? That this diet has proved useful in clearing up many cases of chronic *B. coli* infection of the urinary tract (the primary focus being, as always, the bowel) there can be no doubt.

4. "Calomel in non-purgative doses is probably as useful a drug as any."

And yet its action is to increase the flow of bile, which, as has been said, is an excellent culture medium for the colon bacillus.—I am, etc.,

C. GORDON STRACHAN, M.B., F.R.C.P.Ed.

Cheam, Surrey, Sept. 12th.

Increased Mortality from Diabetes

SIR,—With regard to the recent increased mortality from diabetes it has been suggested that it may not be a real increase, but may be due to the misleading character of the mortality statistics for this disease. It is well known that since the advent of insulin, owing to the greater activity in the routine examination for sugar in the urine and blood, many more diabetics have been discovered; but it does not necessarily follow that that means an increased mortality.

James Raglan Miller refutes this, as far as the U.S.A. statistics are concerned, in an article in the *New England Journal of Medicine* (ccviii, 490). He makes the statement that

"... the modern treatment of diabetes has reduced the number of deaths to such an extent that diabetes can now be considered as scarcely more than a serious handicap." And continues: "It is common knowledge that patients who have diabetes do not at present die because of their diabetes: diabetes, perhaps more than any other condition, seldom appears alone on the death certificate. Before the use of insulin it was in truth a frequent primary cause; in other words, it was diabetes which killed the patient. To-day it is frequently merely a condition which the patient is known to have had—a handicap, which even to the point of death is under perfect control."

Referring to death certification, Dr. Miller tells us that the "Manual of Joint Causes" is peculiar to the United States, being issued by the Central Bureau to regulate in a uniform manner the tabulation of deaths according to a definite scheme. He states:

"It will surprise most physicians to learn the extent to which diabetes takes precedence over other causes of death which appear on the death certificate. If diabetes is mentioned even as a secondary cause, together with any of the diagnoses in the following list, it will get the credit of causing the death."

He refers to a list of 113 diseases, including the following: erysipelas, encephalitis lethargica, acute rheumatic fever, epilepsy, lobar pneumonia, appendicitis, acute nephritis, pericarditis, and other diseases of the heart. He further claims that there is ever present in vital statistics, and from the beginning always has been, an attempt to make the incidence of mortality a measure or index of the incidence of morbidity.

Is it not possible that in recent years, in our own country, owing to the great attention that has been focused on diabetes and glycosuria, once the condition has been diagnosed in a patient, especially one of mature years, the fact is not forgotten: should the patient die from a condition wholly unrelated to diabetes, the glycosuric condition nevertheless finds mention on the death certificate, and thus a condition of morbidity becomes a cause of mortality?—I am, etc.,

Bramhall, Cheshire, Sept. 17th. ALEX. FRASER.

Treatment of Fractures in the Newborn

SIR,—The annotation in your issue of August 25th (p. 363) discussing Drs. Eric Pritchard and Jean Smith's views on the treatment of fracture of the femur in the newly born, states that "the traditional method of dealing with neo-natal fracture of the femur is to bandage the thigh against the abdomen in the 'foetal' position. Nursing becomes very complicated in these circumstances." In July, 1908, after reading an account of twenty fractures of the thigh in the newly born, related by the late Sir Robert Jones, in all of which mal-union had taken place, I explained the treatment which Drs. Pritchard and Jean Smith describe as in the "foetal position." My article distinctly stated that the fractured leg comes to lie on the opposite side of the body; this is not in the foetal position. In my two cases related, the nursing, instead of being complicated, was so simple that one child, when the treatment had been applied, was placed on a pillow and two loose bandages applied round the pillow and child. The broken leg was out of the way, and the mother, raising the pillow on which the child lay, gave the child the breast. Another case subsequently was attended by a friend of mine in Belgium. He reported that the result was perfect and the nursing easy. In all these cases the treatment was the essence of simplicity and the results all perfect.—I am, etc.,

Bolton-le-Sands, Sept. 12th. JOHN EDMONDSON.

Peribronchial Tuberculosis

SIR,—In the *Journal* for September 8th (p. 461) Dr. Douglas Webster mentions—as an instance of diagnostic error—the fact that hundreds of recruits for the armies of Great Britain and America were wrongly rejected because of the confident radiological diagnosis of "peribronchial phthisis." This was twenty years ago: more recently (in May, 1927) a writer in the *American Journal of Roentgenology* was so incensed at the continuous stream of "well" patients sent into his sanatorium that he would hear of nothing less than the total abolition of the term "peribronchial tuberculosis."

Since I was the originator of this term (*Practitioner*, February, 1912, and *British Medical Journal*, August 31st, 1912), I hope you will be good enough to allow me a word of explanation. My thesis was a clear one, and, I think, expressed a rational and common-sense view. Finding (as I did) that pulmonary tuberculosis did not begin, as previously held, at the apices of the lungs but in the middle portions of the chest, opposite the roots—in a region where no physical signs could be made out in the early stages—I published my conclusions that pulmonary tuberculosis originated ordinarily as a catarrhal bronchitis and bronchiolitis. This earliest stage gives no *x*-ray signs, but it prepares the way for the all-important second stage. The walls of the small air tubes, having shed some of their lining epithelium, are no longer impervious to microbes, some of which (tubercle bacilli among them) pass through the weakened places into the peribronchial tissues, where leucocytes begin to assemble in groups for the purpose of dealing with them. These constitute the "fine mottling" which is the earliest *x*-ray sign of active disease. After this, one of three events may follow: (1) complete resolution and disappearance of the *x*-ray mottling; (2) healing by fibrous tissue formation, shown by widening and darkening of the linear shadows that radiate from the roots; (3) advancing disease—the "mottles" coalesce into blotches, then follow the advanced stages of caseation, ulceration, excavation, etc. While disease is advancing in the peribronchial tissues the glands at the root are gradually enlarging, as would be expected, seeing that the microbe-infected region is increasing in extent.

All this seems simple and rational and hardly open to controversy; but strangely enough the idea went abroad that pulmonary tuberculosis had been proved to start in the bronchial glands and spread from them along the air tubes—as soon would I have asserted that a "poisoned" finger started in the axillary glands and spread thence to the finger! Several writers invented theories to explain the remarkable phenomenon. The late Dr. R. Murray Leslie, for instance, invented the term "retropulsion of lymph" to explain it! Worse was to follow: for radiologists throughout the world began diagnosing peribronchial tuberculosis whenever they found dark blotches at the roots and "fibrous" bands radiating from the roots along the air tubes. I protest my innocence of blame for this. In my papers I drew special attention to these appearances in "healthy" chests, and explained them to be Nature's way of overcoming chronic microbic infection of the lungs. Further, I insisted that *mottling* was the only positive sign of active disease of the lungs.

Is mottling always tuberculous? Twenty years ago the answer was an unqualified "Yes"; to-day the reply is,

"Not always at first." The microbic invasion of the peribronchial tissues and the influx of leucocytes that follows (giving rise to mottling) is, I am convinced, nearly always micrococcal. Whether, and how soon, tubercle bacilli arrive there and begin to multiply depends on individual susceptibility to tuberculosis, and this may be inborn or acquired, or both—a fatal combination! Acquired susceptibility to tuberculosis, again, may be local or general. By "local" I mean that a chronic micrococcal infection of some portion of the lung impairs the resistance of that portion and renders it unnaturally susceptible to tuberculosis. By "general" I mean that a general toxaemia renders *all* tissues of the body prone to attack, since the toxaemia depreciates their natural resisting powers, and wherever tubercle bacilli lodge they are able to multiply and gain a firm foothold.—I am, etc.,

ALFRED C. JORDAN, M.D.,
London, W.1, Sept. 10th. M.R.C.P., D.M.R.E.

Pineapple Juice in Oedema

SIR,—I was much interested in the letter on the above subject in the *Journal* of September 8th (p. 492). During an outbreak of beri-beri in the gaol at Kuala Lumpur, Federated Malay States, in the years 1896 to 1898, the Chinese patients with dropsy invariably asked for pine-apple. They said it was good for reducing the swelling. Their request was granted as a placebo, although I thought at the time it might act as a diuretic. The dropsy subsided, but, as they were given other diuretics, I could not attribute its disappearance entirely to the pineapple. I may state that Chinese patients suffering from dropsical beri-beri in other State hospitals also always asked for pineapple.—I am, etc.,

A. J. MCCLOSKY, M.D.
London, W.13, Sept. 17th. Retired Senior Medical Officer, Selangor, Federated Malay States.

"Port Sanitation and Common Sense"

SIR,—"Port Medical Officer" (September 8th, p. 491) has not perceived that my criticism of port authorities is almost entirely directed against *foreign* ones. He cannot have had much experience of these individuals, especially the Mediterranean and South American varieties, each of whom sees himself as a petty Cerberus in charge of the national safety, and to whom the mention of *any* kind of illness (even accidents!) arouses visions of dread epidemics, the ship being regarded as a sort of dung-heap which must forthwith be "disinfected" at a heavy charge to the owners.

In British ports a standard health questionary now at long last prevails in which the question, "Have you had any cases of illness on board whether of an infectious nature or not?" does not occur. "Port Medical Officer" does not see that I was referring here to cases which have occurred during the early part of a voyage *and have since completely recovered*. Why should the ship surgeon almost always be regarded as ignorant or inexperienced in regard to such cases of minor illness? Or, if he must be so regarded, why is no supervision exercised over the general practitioner ashore? Surely he is just as likely to miss ambulatory cases of small-pox, gonorrhoeal sequelae, and typhoid fever as the ship surgeon. What of the port medical officer himself? Is *he* entitled to claim medical omniscience?

Speaking from over ten years' sea-going experience in all parts of the world, I would say that the vast majority of these minor maladies are found to be mares' nests in regard to their danger to the community. In regard to the remainder, it is sad to relate that British law, being the ass that it is, is sometimes woefully lacking. Witness the *Tuscania* affair. This ship landed a case of small-pox at Marseilles homewards. On arrival at Liverpool, though obviously contacts were on board, the ship could not be quarantined in the absence of actual cases. The result was a small epidemic ashore. Surely this requires amendment.

I trust that "Port Medical Officer" will not consider my remarks as directed against himself or other officers in British ports, whom I have almost invariably found sensible and friendly. It is the crass futilities and absurdities of foreign port sanitation procedures that I am up against. Surely the time has come when all such procedures should be made internationally uniform, and some system of checking a ship from point to point of its voyage be established in place of the present one of treating it as an "unknown quantity" at every port.—I am, etc.,

September 9th. SHIP SURGEON.

Injuries of the Knee-Joint

SIR,—I have just read Dr. Stewart's letter (July 7th, (p. 40). I am as unwilling as he is to perpetuate old heresies, but I am equally unwilling to subscribe to new ones. I hasten to assure him that I have never seen a joint "locked" in extension, but I read his letter to mean that he had. Absence of full extension presupposes some degree of flexion, and I suggest to him that in his cases the injury occurred during an attempt to re-extend the joint after a temporary flexion—that is, a rebracing under strain.

I welcome his suggestion of a slow-motion picture—if he is fortunate enough to obtain one I feel he will change his views. In the meantime perhaps he will describe the mechanism by which injury to a cartilage occurs in a fully extended knee-joint without severe damage to other joint structures.

I regret it was not clear that the last paragraph of my letter (June 23rd, p. 1142) referred to another part of Mr. McMurray's paper—that on crucial ligament injuries.—I am, etc.,

Newcastle-on-Tyne, Sept. 11th. G. STEWART WOODMAN.

The Swab in Diphtheria Diagnosis

SIR,—I have read with considerable interest correspondence on this subject. As a medical officer of health and superintendent of a fever hospital I have seen a considerable number of cases of this disease during the past fifteen years, and I would like to make the following observations:

1. The diagnosis of diphtheria is by no means as simple as some of your correspondents would maintain; in the early stages of the disease I would defy any expert to diagnose many of the cases.

2. If a practitioner is in any doubt that a case is clinically diphtheria he should not only take a swab, planting the swab exactly upon the suspected area on the tonsil or elsewhere, but should also remember that in quite a number of cases a nasal swab will give a positive result where a throat swab will not. But if there is clinical evidence which renders the practitioner doubtful as to the case being diphtheria it should at once be given at least 8,000 units of concentrated antitoxin, and if the history is longer than twenty-four hours such a dose should be doubled or trebled. Many a child's life would be saved if only this procedure were adopted.

3. It is my sad experience that in all cases of faucial diphtheria, if no antitoxin has been given prior to the fourth day of the disease, if they are true clinical

diphtheria, most will prove fatal: in fact, I always regard it in the nature of a miracle if such a case can be saved, no matter how much antitoxin is given or how it is given, whether intravenously or intramuscularly. The diphtheria toxin has got such an anchorage into the cardiac system that nothing will remove it; the throat may have cleared completely, but still the child will die.

4. There is no doubt whatever that certain cases of faucial diphtheria may give negative swabs—at any rate, *throat* swabs—although possibly the nasal swab, if taken, might have proved positive. Such patients, unless treated as diphtheria, will certainly die, and clinical evidence of the disease in these instances should certainly justify specific treatment. One such case I can recollect did not give a positive swab until the child had been ill for a fortnight and was on the point of death.—I am, etc.,

F. A. BELAM, M.D.,
Guildford, Sept. 15th. Medical Officer of Health.

Obituary

THE LATE DR. C. W. HUTT

Dr. J. S. MANSON, Warrington, writes:

As an old personal friend of Hutt I would like to add a few words to the admirable obituary notice in your issue of September 8th (p. 493). Our friendship commenced during his stay in Warrington, and was maintained with the warmest affection for nearly twenty-five years. His Warrington friends rejoiced at the richly deserved success which he attained in the public health world, and it has been a great solace to me that we stayed together during the meeting of the Scientific Sections at Bournemouth in July. Although in poor health he came down from London to give his valuable contribution to the Public Health Section on immunization against diphtheria, and he was pleased that the Representative Body had authorized the setting up of a special committee on immunization.

He was secretary of the Public Health Section at the Edinburgh meeting in 1927, and although a loyal member of the Royal Institute of Public Health he had a great respect for the Public Health Section of the British Medical Association, and thought that there might be closer co-operation between the two bodies. He often used to speak of his Continental visits, and his broadmindedness and facility of contact with foreigners made one regard him as a good European. He has been cut off when it seemed that further success and honour awaited him; and while all those who knew him deeply regret his loss, their sympathy goes out to his widow and family.

Dr. THACKER KING of Sandfield House, West Kirby, died on July 25th, aged 75. He studied medicine at Dublin, taking the L.R.C.P.I. and L.M. in 1883, and later the Durham M.D. Dr. King worked in West Kirby as a general practitioner for over forty-five years. He had three sons, two of whom he lost in the war, and one, Dr. George King, shortly after he had taken him as a partner. The loss of his sons was a great sorrow to him and Mrs. King, and one from which they never wholly recovered. Dr. Thacker King's success in practice was phenomenal, for he was endowed with the "physician's instinct," and this, coupled with a vast experience and knowledge derived from attending the sick and from extensive reading, rendered him invaluable to his numerous patients. He was a man of fine presence and strong personality, always ready and willing to visit and help anyone at any time, day or night. In addition, his courteous manners, sympathy, and honesty endeared him to friends and patients alike. His loss will be felt acutely by generations of people whom he treated and befriended, and the example he set of clean living, fairmindedness, and friendliness will live for many years. He had been a member of the Birkenhead Division of the British Medical Association for fifty years.

The Services

DEATHS IN THE SERVICES

Lieut.-Colonel Edward Pettingall Youngerman, Madras Medical Service (ret.), died on July 11th, aged 76. He was born on February 4th, 1858, and was educated at Edinburgh, where he graduated M.B., C.M. in 1879. Entering the I.M.S. as surgeon on October 1st, 1881, he became lieutenant-colonel after twenty years' service, and retired on March 2nd, 1907. He served in the Burma campaigns in 1885–6, receiving the frontier medal with a clasp. His whole service was passed in military employ in Madras regiments.

Colonel Claude Kyd Morgan, C.B., C.M.G., late R.A.M.C., died at London, Ontario, on August 10th, aged 62. He was the son of the late David Morgan, J.P., of Douglasleigh, Carnoustie, was born at Inverkeillar, Montrose, on December 2nd, 1871, and was educated at Aberdeen, where he graduated M.B., C.M. in 1893. Entering the R.A.M.C. as surgeon lieutenant on July 28th, 1894, he was promoted to lieutenant-colonel in the long war promotion list of March 1st, 1915, became colonel on December 26th, 1917, and retired on September 22nd, 1920. He was on special plague duty in Bombay in 1899–1921, when he received the thanks of the Government for his work. He served in the war of 1914–18 as A.D.M.S., and was mentioned in dispatches in the *London Gazette* of February 17th and June 22nd, 1915, January 1st, 1916, and May 29th, 1917. He received the C.M.G. in 1916, the C.B. on June 3rd, 1919, and the Legion of Honour. In 1918 he was a member of a British mission to Washington. Two years ago he was appointed honorary lieutenant-colonel of the Canadian Fusiliers and City of London Regiment. In 1905 he married Eleanor (O.B.E., 1919), daughter of the late T. H. Smallman of London, Ontario. By a curious mistake—a confusion with another officer of the same name and initials—his name was entered as dead in the casualty list in the War Office *Army List* for May, 1930.

Universities and Colleges

UNIVERSITY OF DURHAM COLLEGE OF MEDICINE, NEWCASTLE-ON-TYNE

Centenary Celebrations

The one hundredth anniversary of the foundation of the University of Durham College of Medicine, Newcastle-on-Tyne, will be celebrated on Thursday and Friday, October 4th and 5th. During the afternoon of the first day the College will be open for inspection, and at 8.30 p.m. there will be an official reception of visitors by the President, Sir Thomas Oliver, in the Great Hall, followed by a conversazione and dance. On Friday morning visits will be paid to view the clinical facilities of the College, the Department of Dentistry, and the Bacteriological Department and Public Health Laboratory.

In the afternoon there will be a luncheon party in the Great Hall of Durham Castle, and a special convocation in the Chapter House of Durham Cathedral, presided over by the Marquess of Londonderry, Chancellor of the University. Honorary degrees will be conferred as follows: Doctor of Civil Law, Sir E. Hilton Young, Minister of Health, and Sir Holburt Waring, President of the Royal College of Surgeons of England; Doctor of Hygiene, Sir Francis Dyke Acland, Chairman of the Dental Board of the United Kingdom, and Dame Janet Campbell, M.D.; Doctor of Surgery, Major-General J. A. Hartigan, D.G. Army Medical Services, Dr. J. W. Leech, M.P., and Dr. William Robinson; Master of Arts, Dr. W. D. Arnison. The closing event will be a commemoration service at 3 p.m. in Durham Cathedral, at which the Bishop of Durham, Visitor of the University, will give an address. A *Centenary History of the Medical School*, published by Andrew Reid and Co. Ltd. at 10s., has been prepared for the occasion by Professor G. Grey Turner and Dr. Arnison.

UNIVERSITY OF LONDON

KING'S COLLEGE HOSPITAL MEDICAL SCHOOL

The following entrance scholarships have been awarded at King's College Hospital Medical School: *Raymond Gooch Scholarships*, D. I. Williams (King's College, London), S. C. Truelove (Trinity Hall, Cambridge); *Burney Yeo Scholarships*, C. I. Murphie (Wadham College, Oxford), R. B. Niven (Queen's College, Oxford), D. Whitteridge (Magdalen College, Oxford); *Epsom College Scholarship*, E. Ll. James (Jesus College, Oxford); *Seaman Scholarship*, J. Smallpeice (King's College, London).

Medico-Legal

BUSINESS RELATIONS BETWEEN DOCTORS*

DISSOLUTION OF PARTNERSHIP. II

QUARRELS BETWEEN PARTNERS

The court will dissolve a partnership in which so intense an ill-feeling has arisen between the partners as to destroy all their confidence in one another, or where there has been an irreparable breach, so that they can no longer carry on business together. A Master of the Rolls (Wray *v.* Hutchinson, 1834) once said that although the partnership would be dissolved if the defendant had substantially failed to perform his part of the agreement, yet it was not the duty of the court to consider mere partnership squabbles. Far too many cases are brought before the courts in which the disputing partners launch the most damaging charges against one another and seriously injure their own good names and that of their profession, besides ruining themselves financially. The court suppresses as much of this mutual abuse as it can, but has to hear such accusations as seem relevant to the applicant's case. The medical defence societies, the heads of the British Medical Association, the editors of medical journals, and all other men of authority in the profession are constantly advising medical partners to keep their quarrels out of the law courts, and I make no apology for emphatically repeating this advice.

Nothing does more harm to the profession or to a pair of practitioners than to have the evening papers full of their mutual and detailed accusations of fraud, sloth, chicanery, petty malice, drunkenness, and immorality. The files of this *Journal* and of the *Lancet* contain a number of instances of this disastrous form of litigation. The charges are nearly all much exaggerated by dislike and irritation, and even if they are true, why on earth have them published? It is the easiest thing in the world for two partners, however bitter their private quarrel may be, to take it to the secretary of one of the defence societies or of the British Medical Association, or to a solicitor with a large medico-legal practice, and have a legal agreement made to dissolve the partnership. If they cannot agree about the disposal of the goodwill and the partnership assets, any of these advisers can easily find them an able and experienced arbitrator of high standing whom they can both trust. They gain nothing by going to law, because when the dispute clearly arises from personal antagonism the judge will nearly always press the partners to settle their dispute out of court instead of wasting public time, and they will then find themselves constrained to appoint an arbitrator after all, having spent a large sum on legal advice and representation and gained nothing in return.

It is possible to multiply examples of this kind of litigation, but I will select one[1] as typical of the general run of partnership squabbles.

Two medical men entered into partnership in London, one agreeing to pay £2,500 for a share in the other's practice. He paid up £2,000, but would not pay any more, and the other sued him for the balance. The purchaser counter-claimed for damages on the ground of fraud and misrepresentation, mainly as to the value of the practice; he also claimed the return of his £2,000 and the rescission of the partnership agreement. The seller thereupon accused the purchaser of chronic recurrent alcoholism, which made him incapable of constantly and regularly performing his part of the partnership agreement. After both doctors had wasted a great deal of time and money fighting the case, they yielded to the pressure of the judge and made a whole-hearted retraction of their statements.

The partnership relation (remarks our contemporary) was evidently intolerable to both. Why could they not save themselves friction, cost, and publicity by a simple mutual agreement to dissolve? The purchase money was the stumbling-block, but if they could have referred the point to some umpire in whom both had confidence, he could have settled the dispute and they would not have needed to waste money in litigation.

If a partner finds himself in the unpleasant position of suspecting his fellow of serious misconduct, and decides that he must have recourse to a third party, he must take care that he does not expose himself to an action for libel or slander by his fellow. Even if he makes a statement to another person which he honestly considers necessary to protect his own and the partnership interests, he must be prepared to prove to the satisfaction of a jury: (1) that the third party to whom he resorted was one to whom he might rightly and reasonably have turned in the circumstances; and (2) that he acted in absolute good faith, with no ulterior motive. For instance, he may safely consult a solicitor, or ask in confidence the advice of another medical man of good standing whose wisdom and experience may help him and who has no personal prejudice, or approach a person with authority to take action. If, for instance, he considers it necessary to take the extreme step of having his partner certified as of unsound mind, he may furnish the necessary information to the medical man whom he is asking to give the certificate.

RIGHTS OF PARTNERS IN DISSOLUTION

When the court orders dissolution, the partnership will usually be dissolved from the date of the judgement. If, however, there has been any actual misconduct, or a breach of duty under the articles, or bad faith, the court may order the dissolution as from an earlier date, so that the guilty partner may not draw profits for the time during which the business was being damaged by his misconduct.

When a partnership is dissolved or a partner retires, any other partner may publicly notify the fact and require the other partners to concur in all necessary steps which he could not take without their consent, such as signing their names to an advertisement in the *London Gazette*—one of the means laid down by the Partnership Act of giving notice to all whom it may concern. The legal position of the partners, both with regard to each other and to outsiders, remains the same until the affairs of the partnership have been wound up and transactions which were commenced before the dissolution have been completed. Each partner, except a bankrupt, still has authority to bind the firm, and his rights and obligations are not altered. Each partner is entitled to have the property of the firm applied to pay off its debts and then to claim his share of the remainder, less anything he may owe the firm. For this purpose any partner or his representatives may after dissolution apply to the court to wind up the firm's business. A medical partner, however, cannot have the goodwill and connexion of the partnership sold, because its value is largely potential and depends on the future exertions of the several ex-partners.

In Farr *v.* Pearce (1818) A paid B a large premium for a share of his practice. A died and B sold the practice for a considerable sum. The representatives of A were held not to be entitled to any share of the money for which the goodwill was sold. Sir J. Leach, Vice-Chancellor, said in his judgement: "It would be difficult to maintain that where a partnership is formed between professional persons, as surgeons, and one dies, the other is obliged to give up his business and sell the connexion for the joint benefit of himself and the estate of his deceased partner. When such partnerships determine, unless there be stipulations to the contrary, each must be at liberty to continue his own exertions, and where the determination is by the death of one, the right of the survivor cannot be affected. Such partnerships are very different from commercial partnerships.

* The first of these articles, by a legal correspondent, appeared on June 9th, 1934 (p. 1053), the second on June 23rd (p. 1145), the third on July 7th (p. 42), and the fourth on July 21st (p. 141).

[1] *Lancet*, 1926, ii, 37.

The goodwill therefore belongs to no one and is available to anyone who is willing and able to make use of it. When, however, goodwill has already been sold by some one in a position of trust, or under an arrangement made to defraud creditors, the court will order the proceeds to be paid to any person who has in conscience a right to them. For instance, a medical partner runs heavily into debt, and knows that in a month or two his largest creditor will make him bankrupt. He therefore assigns his interest in the practice in exchange for an annuity payable to his wife till her death and afterwards to him. The court would declare this transaction void as a fraud against the creditors.

RETURN OF PREMIUM

When one partner, on entering into partnership for a fixed term, has paid another partner a premium, and the partnership is dissolved—otherwise than by the death of a partner—before the expiration of the term, the court may order the recipient to repay as much of the premium as it thinks just, considering the terms of the contract and the length of time during which the partnership has continued. The court will, however, not order repayment if the partnership is dissolved largely because of the misconduct of the partner who paid the premium, or if it is dissolved by an agreement which contains no stipulation that any part of the premium should be repaid. The fraction to be repaid has always been determined by purely arithmetical means: dividing the whole amount of the premium by the number of years in the term and awarding the sum corresponding to the number of years that have elapsed. Death is excepted because it is a contingency that must be contemplated by everyone, and possibly lunacy may also be excepted. If an affluent partner pays a premium to a doctor whom he knows to be in financial difficulties, he may not be able to recover any of it if his partner goes bankrupt, but if he did not know that the recipient was embarrassed he may have the problematical satisfaction of proving his claim in bankruptcy. When a partner is seeking to recover some of his premium, counsel should ask for an order for its return at the trial of the application for dissolution. If this is not done, the partner will probably lose his money, for the court will only in special circumstances make an order after it has given judgement for dissolution.

The following cases illustrate the principles on which the courts order premium to be returned.

In Freeland *v.* Stansfeld (1854) two medical men, F and L, agreed to become partners for seven years. F paid L a premium of £900, and was to take one-third of the profits. In a year and a half L became bankrupt, and F sued S, the trustee in bankruptcy, asking for dissolution and the repayment out of the partnership assets of a proportion of the premium. S contended that F had had full value for his £900 in being introduced to L's patients and given the opportunity of forming a valuable connexion; he said also that if F had a claim he ought to make it as an ordinary creditor in bankruptcy. Stuart, Vice-Chancellor, declared in his judgement, however, that the premium was paid not for the introduction alone, but also in order that L should carry out his part of the agreement, which included the division of the profits. The partnership was ended prematurely by L's default, and as F could no longer obtain a considerable proportion of what he had paid for, it was not unnatural that he should claim that a corresponding proportion of his premium should be given back to him. It is a settled principle in equity that if, under a contract, a sum of money is paid for a consideration which afterwards fails, the recipient of the money must pay back that part of it which corresponds to the part of the consideration which has failed. The Vice-Chancellor awarded F £700 out of the partnership assets.

In Astle *v.* Wright (1856) the partnership was dissolved after a few months on account of personal friction. W, the newcomer, complained that A, the recipient of the premium, had failed to introduce him to the patients and had misrepresented the value of the practice. A, in his turn, charged W with neglecting to attend to the surgery, make up the medicines, or keep the books. Half the premium had been handed over; A claimed the remainder with interest and W claimed the return of what he had paid. The Master of the Rolls found that there had been no misrepresentation, as W had spent a considerable time in A's house and had ample opportunity of judging the value of the business. He ordered A to return that part of the premium which corresponded to the unexpired term.

In Atwood *v.* Maude (1868) M, the recipient, alleged that A was so incompetent that the business could no longer be carried on, but the Court of Appeal considered that M had had ample opportunity to judge of A's capacity before he entered into the contract. As there had been no fraudulent or wilful misconduct, they ordered M to return an appropriate part of the premium.

In Wilson *v.* Johnstone (1873) Wickens, Vice-Chancellor, suggested that the court would only refuse to order the return of premium in a case where the payer had committed such deliberate and serious breach of the partnership contract as might be considered equivalent to a repudiation of it altogether. Mere conduct entitling the recipient to a decree for dissolution would not, he thought, be sufficient. The Act, on the other hand, lays down that there need be no return of premium when the dissolution is chiefly due to the misconduct of the payer, and return may perhaps be refused nowadays on grounds which would not have been sufficient before the Act.

It has been held more than once that, when the partnership articles contain a general clause providing a reference to arbitration of any difference between the partners as to anything relating to the partnership, the arbitrator can award dissolution and a return of premium (Belfield *v.* Bourne, 1894). It is, of course, always open to partners to agree to refer a dispute or conditions of dissolution to a named arbitrator and to abide by his finding.

FRAUD: CONTINUATION OF BUSINESS

If a partner is induced, by the fraud of another partner, to enter into a partnership and pay a premium, he has a choice of two remedies. He may either repudiate the contract altogether and sue for rescission, or he may affirm the contract and sue the offending partner for damages. If the other partner has misrepresented the value of the share or the nature of the practice, but not in such a way as actually to commit fraud, the aggrieved partner may successfully claim rescission and repayment.

When a partner proves that another has been guilty of fraud or misrepresentation and succeeds in obtaining an order of the court for the rescission of the partnership on those grounds, he is given several important rights in addition to his ordinary rights as a member of a dissolved partnership. He has a lien on, or a right to retain, the surplus of the partnership assets which is left over after the liabilities are settled, to satisfy him for any sum he has paid for a share in the partnership and for any capital he has contributed to it. If he has paid off any partnership debts, he may stand in the place of the creditors whom he has paid, and the partner who has committed the fraud or misrepresentation must indemnify him against all the debts and liabilities of the firm. He is treated, in fact, as though the partnership had never existed, and the law endeavours to place him, as far as it can, in the position which he occupied before he entered into the partnership agreement.

If a partner dies or otherwise ceases to be a partner, the partnership is, of course, dissolved. Nevertheless, it sometimes happens that the remaining partners carry on the business of the firm with its capital or assets. If they do this without settling a final account with the outgoing partner or his representative, then he or his representative is entitled either to that proportion of the profits made since the dissolution which the court may attribute to the use of his share of the partnership assets, or to interest at 5 per cent. on the amount of his share. When the partnership agreement contains a clause giving the continuing partners the option of buying the share of a partner who dies or goes out, and they exercise that option, then the outgoing partner or his representatives cannot claim any further profits. They must, however, comply in all material respects with the terms of the option, or they may have to account to him for his share of the profits since dissolution. The goodwill or connexion of the partnership is not an asset in this sense, but an appointment is.

Medical News

The annual dinner of past and present students of Charing Cross Hospital Medical School will take place on September 29th at the Café Royal, Regent Street, at 7.30 for 8 p.m., with Dr. J. Bright Banister in the chair; cost of tickets 10s. each. The autumn post-graduate course will be held on Saturday and Sunday, September 29th and 30th, from 10 a.m. to 5 p.m.

The new session of the London (Royal Free Hospital) School of Medicine for Women will open on Monday, October 1st, at 3 p.m., when an address on "The Institutes of Medicine" will be given by Dr. M. H. MacKeith, dean of the British Post-Graduate Medical School.

A post-graduate course, open to all medical practitioners without fee, will be held in the library of the new medical school, and in the lecture theatre of the Pathological Institute, at St. Mary's Hospital, on Friday, Saturday, and Sunday, September 28th, 29th, and 30th, commencing at 10.15 a.m. daily.

As already announced the annual old students' dinner of Westminster Hospital will be held on Saturday, September 29th, at the Trocadero Restaurant, at 7.15 for 7.45 p.m. The chairman on this occasion will be Mr. William Turner, senior surgeon, who retires from the active staff on October 1st, after thirty-seven years' association with the hospital.

A "refresher" course will be held at Middlesex Hospital Medical School from September 28th to October 1st inclusive at 10.15 a.m. daily. The course is open only to past students of the Middlesex Hospital. The opening ceremony of the new session will be held on Monday, October 1st, at 3 p.m., at the Queen's Hall, and the annual dinner at the Savoy Hotel at 7.30.

Two courses of lecture-demonstrations will be held at the Medical School, National Hospital, Queen Square, W.C., from October to December, 1934, and from January to March, 1935. These will include demonstrations on anatomy, physiology, and pathology, and demonstrations on post-mortem material, at 12 noon; lectures on the principles of neurology and on nervous diseases, at 3.30 p.m.; demonstrations of clinical methods of examination in nervous diseases, at 5 p.m. The autumn course of lectures from October 8th to December 7th, 1934, includes thirty-six lectures on the principles of neurology, and the winter course of lectures and demonstrations from January 28th to March 29th, 1935, includes thirty-six lectures on nervous diseases. The fee for each course is £10 10s., and special arrangements will be made for those unable to take the whole course.

The Fellowship of Medicine (1, Wimpole Street, W.1) announces that lecture-demonstrations will be given at 11, Chandos Street, W., on Tuesdays at 2.30 p.m., as follows: September 25th, paraplegia; October 2nd, tremor. Forthcoming arrangements include a week-end course in diseases of the heart and lungs at the Royal Chest Hospital, occupying the whole of October 13th and 14th; diseases of children at the Queen's Hospital, October 1st to 13th, all day; dermatology at St. John's Hospital, October 1st to 27th, afternoons and evening; physical medicine at St. John Clinic and Institute of Physical Medicine, October 1st to 27th, evenings; medicine and surgery at the Metropolitan Hospital, October 8th to 20th, all day; ophthalmology at the Royal Westminster Ophthalmic Hospital, October 15th to November 3rd, afternoons. Courses of instruction are open only to members and associates of the Fellowship.

The twenty-second annual conference of the Scottish Association of Insurance Committees will be held at Stranraer on September 28th and 29th in the Town Hall. The programme includes an address by Professor Charles McNeil, M.D., of Edinburgh.

The Royal Sanitary Institute has arranged a sessional meeting at Finchley on Friday, October 5th. At 3 p.m. the members will inspect the Finchley open-air swimming pools in the Great North Road. The mayor will receive the members at 4 p.m. and entertain them to tea, and at 5 p.m., in the dance hall, papers will be read on "The Finchley Swimming Pools" by Mr. P. T. Harrison, and on "The Purification of Swimming Bath Water" by Dr. A. A. Turner.

The Minister of Health has had under consideration, in consultation with the Commissioners of Customs and Excise, what further steps can be adopted for avoiding conflicting decisions on the question of blindness for the purposes of (*a*) blind old age pensions under Section 1 of the Blind Persons Act, 1920, and (*b*) the registration of blind persons under schemes made by local authorities in pursuance of Section 2 of that Act. It has been decided that from October 1st next the pension officer, before reporting on a claim for a blind pension in England and Wales, shall send a form of inquiry (Form O.A.P. 87) to the appropriate registration authority asking the following questions: (1) Has the claimant applied for registration as a blind person? (2) Has the claimant been registered or refused registration? (3) In either case, was the claimant examined and certified by a medical practitioner with special experience in ophthalmology? (4) If the answer to (3) is in the negative, on what evidence was the claimant registered or refused registration? Where the Minister gives a decision on a pension appeal which is contrary to that previously given by the registration authority on the question of registration, he will on the request of the authority send it a copy of the medical certificate obtained by him.

The issue of *Paris Médical* for September 1st is devoted to ophthalmology and oto-rhino-laryngology.

Queen Marie of Yugoslavia will open the new Anglo-Yugoslav Children's Hospital at Kamenica this month. The hospital will specialize in the treatment of tuberculosis. According to Dr. Katherine Macphail, who founded the Anglo-Yugoslav Children's Hospital at Belgrade, where 170,000 patients have been treated, tuberculosis accounts for the death of 50,000 persons annually, and at any given time there are estimated to be more than half a million people suffering from the disease out of a population of rather more than thirteen millions. The Belgrade Hospital, which was for some years the only children's hospital in the country, has received support from the Save the Children Fund from its earliest years.

The King's Fund miniature hospital, built for King Edward's Hospital Fund for London at a cost to the contributing firms of nearly £3,500, has recently completed a year's successful tour of the provinces. The model is now to be exhibited at various leading stores in the London suburbs during the next few months.

Sir Grafton Elliott Smith of London and Professor Charles Nicolle of Tunis have been elected honorary foreign members of the Royal Academy of Medicine of Belgium.

Medical stamp collectors will be interested to know that the Hungarian Government has recently introduced stamps bearing the likeness of Philip Ignaz Semmelweis after the model of the French stamps with the head of Pasteur.

The Berne University Foundation for the Advancement of Researches on Encephalitis has offered a prize of 1,000 Swiss francs for the best work on the diagnosis and treatment of encephalitis. Competitors should communicate with the dean of the Faculty of Medicine of Berne.

The following appointments to professorial chairs have recently been made in the American faculties of medicine. Boston: Dr. W. Overholsen, psychiatry; Dr. L. C. Howard, orthopaedic surgery and traumatology; Dr. D. Jacoby, dermatology; and Dr. L. W. Colburn, otology. Columbia University, New York: Dr. D. Symmers, general pathology; Dr. M. D. Rosenbluth, clinical medicine; Dr. C. Gordon Heyd, clinical surgery. Chicago: Dr. Amburger, clinical medicine. Harvard: Dr. S. H. Waite, ophthalmology.

Letters, Notes, and Answers

All communications in regard to editorial business should be addressed to **The EDITOR, British Medical Journal, B.M.A. House, Tavistock Square, W.C.1.**

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QUERIES AND ANSWERS

Burning Sensation in Diabetes

"J. S. M." writes: I have a case of diabetes on insulin. This patient complains of an intense feeling of burning and heat over the lumbar regions. There is no sign of local irritation, and general treatment has failed to relieve. I would be grateful for suggestions as to cause and prevention. Can it be a specific effect of the insulin?

John Knight: Serjeant Surgeon

"E. M. C." asks for information about Dr. John Knight, Serjeant Surgeon in the time of Charles II.

⁂ Sir D'Arcy Power wrote an article on "The Serjeant Surgeons of England and their Office." It appeared in *Janus* (1900, p. 174), and was reprinted in the *St. Bartholomew's Hospital Journal*, 1900–1, vol. viii, p. 81). Speaking of John Knight, who was appointed Serjeant Surgeon in 1661, he says: "He was one of those who attended Charles II on his voyage from the Hague to Dover at the time of his restoration. He was constantly occupied with matters concerning the sick and wounded seamen during the Dutch War." He was therefore mainly a naval surgeon, but as the two services were not then separate he also acted from time to time as surgeon general to the Army. Mr. Pepys dined with him, and reports him as being merry and very good company. Professor G. E. Gask has also written an account of the earliest surgeons attached to the Court in the *Proceedings of the Royal Society of Medicine* (vol. xix). Two further references to Serjeant Surgeons will be found in the *British Medical Journal* (1900, i, 583, and 1925, i, 224).

Head and Foot Presentation

Dr. PAUL GOLDSCHMIDT-FÜRSTNER (Cologne) writes in reply to Dr. Alastair C. Thomson's inquiry regarding the frequency or otherwise of simultaneous head and foot presentations (*Journal*, August 25th, p. 380): I found the following relevant passage in Jaschke-Pankow's *Lehrbuch der Geburtshilfe*, 1923—"Protrusion of a foot beyond or beside the head occurs practically *only* with an immature or macerated foetus, or it may occur in the case of twins, where both commence descent at the same time. In singleton births one replaces the foot, or if it has descended too far one changes the position into a true foot presentation through traction on the foot and replacing the head from without." Protrusion of both feet alongside the head is not noted. I myself have seen at least two cases in which one foot presented alongside the head, and in which reposition of the head with traction on the foot proved successful.

Income Tax

Employment Abroad

"J. A. F." entered into an agreement with a person residing in Canada to act as his medical attendant, and served him in that capacity abroad from September, 1931, to January, 1934. He had no residence in the United Kingdom, but paid short vacation visits here. Is the income liable to assessment?

⁂ In our opinion, seeing that the services were rendered wholly abroad to a foreign principal, "J. A. F." is not liable. The contrary would, however, have been the case if he had maintained a residence here.

Division of Partnership Assessment

"E. C."—As for 1933, "A's" share was reduced from two-thirds and "B's" increased from one-third to one-half each. At the same time the profits of the practice fell from £4*x* to £3*x*. Consequently "B" is now assessed at one-half of £4*x*, whereas he did not receive more than one-half of £3*x*. Has he any remedy?

⁂ No. There has been no change in the personnel of the firm, and consequently a fresh start cannot be claimed for the operation of the basis of assessment of the previous year. It is a result of the principle of dealing for income tax purposes with a firm as a distinct entity, and a fluctuation (up or down) of profits necessarily disturbs the equity as between the two partners.

Payment of Subscriptions

"J. C." refers to an issue of this *Journal* in which it was stated that subscriptions to the British Medical Association, medical defence societies, etc., were deductible, and explains that in his income tax return, made as an assistant M.O.H., he claimed to make such deductions, and his claim was refused.

⁂ The reply to which our correspondent refers related to an assessment under Schedule D in respect of profits, whereas his personal liability falls under Schedule E as being in respect of the emoluments of an employment. There is an unfortunate difference, the statute being stricter in the case of Schedule E. The point was decided against the taxpayer in 1925 in the case of Simpson *v.* Tate.

LETTERS, NOTES, ETC.

Asthma in Children

Dr. ALEXANDER FRANCIS (London, W.) writes: The letters by Sir James Dundas-Grant in the *Journal* of August 4th and by Dr. James Adam in the issue of August 18th on asthma in children are valuable in drawing attention to the importance of nasal examination, and to the necessity of putting some check upon the present craze of considering allergy as the root of all ills. It is really amusing to note how apt we are to run any new idea to death. Allergy, sinusitis, septic tonsils, adenoids, intestinal sepsis, etc., are active sources of irritation, but they are only the *exciting* causes of asthma. Certainly it is important to remove such irritations, but we must not allow them to mask the fact that the fundamental cause of asthma is vasomotor instability. I could quote case after case in which vaccines and immunizing injections against allergic irritants have proved useless, and in which such irritants have lost their harmful effects when the vasomotor system has been made stable. In one case a boy of 12½ had had twenty-five months of weekly injections, in addition to having had his tonsils, adenoids, and appendix removed, and to undergoing two years of glucose treatment, without deriving any apparent benefit. As soon as his vasomotor system had been made stable and he was fitted with proper glasses his asthma left him. Another boy of 14, who had suffered from asthma from the age of 3, had had five years of injections in the vain hope of immunizing him against the supposed allergic causes of his trouble. He obtained almost immediate relief after I saw him in 1932, and has remained free from asthma, except for occasional attacks as the result of some undue excitement. Owing to the fact that the nervous system in children is more impressionable than in adults, it takes a rather longer time as a rule to make their vasomotor systems stable, but as a class they give a higher percentage of good results.

Prognosis in Hypertension

Dr. H. O. GUNEWARDENE (Colombo, Ceylon) writes: It is very interesting to read Dr. Platt's observations upon hypertension and albuminuria in the *Journal* of July 21st (p. 138). For many years I have found that a persistent diastolic pressure of 130 or over, and a urine showing what I have chosen to describe as a " cigarette-puff density " of albuminuria to the heat test, is reliable ground on which to base a very bad prognosis, even in the absence of serious changes in the retina. I have used this expression as regards the albuminuria in order to indicate in a simple way that the quantity of albumin need not be much. It may be anything above this quantity. Here is an illustrative case:

M. R. C., aged 39, married, seen by a doctor, sought advice as he was rejected by an insurance company, being a case with high blood pressure. Condition on examination: Apex beat, quarter of an inch external to nipple line; pulse 72; blood pressure 200/140; lungs normal; spleen ++ (malarial); liver normal; urine, specific gravity 1005, albumin +, no sugar. Micturition was twice nightly and four to five times a day. There were no arterial changes in the fundi. Treatment was by (1) lacto-vegetarian diet, with weekly fasts; (2) elixir sodium sulphocyanate (P. D. and Co.), as directed; and (3) potassium iodide, potassium bromide, and magnesium sulphates. This patient died within nine months from cerebral haemorrhage.

These two observations seem to be quite enough in most cases, whatever the pathology of the kidney. When a patient comes with a single specimen to the general practitioner's consulting room, or even to a specialist, one is often obliged to give a prognosis if possible without the help of so many renal function tests—at least when the patients cannot afford to pay the biochemist or are unwilling to attend hospital.

Treatment of Dysmenorrhoea in Virgins

Dr. NUTTING FRASER (St. John's, Newfoundland) writes: In the *Journal* of August 11th (p. 257) you review Dr. James Young's *Text-Book of Gynaecology* in a very favourable way, expressing views which those of us who have read the book will heartily endorse. You do not agree with him that " an infected cervix is a common cause of pain in women," and I would like to state that my experience quite coincides with the opinion expressed in Dr. Young's book. I find that many of the cases of severe dysmenorrhoea in young girls are caused by an infected cervix, and medicine is powerless to relieve the distress. Of course, we all hesitate to examine a virgin, and such examination calls for a general anaesthetic. But if the small rectal speculum, commonly used for injecting haemorrhoids, is used, an examination can be satisfactorily made without any injury to the hymen. The cervix can be exposed, drawn down, and cauterized. Five years ago a lady asked me to treat her maid for dysmenorrhoea, the pain being so severe that she lost a couple of days each month. Medicine proved ineffectual, but the patient was desperate, and would submit to anything that might give relief. An examination was thus decided upon and was made under an anaesthetic. The cervix was badly eroded and exuded pus. Both lips were deeply cauterized, and up to the present time the result has been a complete relief of the pain. Menstruation is regular and painless. Following this case I have treated many others in the same way, and always successfully, and I would like to draw attention to the fact that the rectal speculum can be used like the old Ferguson speculum, and need not damage the hymen.

Adrenaline and Cerebral Haemorrhage

Dr. A. J. DUNLEVY (Ogmore Vale, Glamorgan) writes: The history of this case may prove of sufficient interest for publication. I must state that the treatment was accidental, but I think the case worth recording as an observation. Whilst acting as locumtenent I was called to see a woman who was supposed to have swallowed some liniment in mistake for brandy. She certainly may have tasted the liniment, but she had not swallowed any. I gave the usual milk and albumin treatment, and satisfied myself that she was all right before I left her. I was called to the same patient that afternoon and found her unconscious, with stertorous breathing. I had been told by her own doctor that this patient had a bad heart. Without waiting to do any examination I gave 1/100 grain adrenaline and 1/30 strychnine. After I had given the injections I discovered that there was a hemiplegia of the left side, and that the case was really one of cerebral haemorrhage. I felt that I had made a grave error in treatment. I saw the patient later that night and found her a little better. Next morning she was conscious, and felt quite well; in fact, it was with difficulty that she was persuaded to stay in bed, as she felt so fit. I think the original " poison " fright probably caused the cerebral haemorrhage. We know that adrenaline constricts the vaso-constrictor nerves, but I think that it is generally understood that the cerebral vessels are not supplied with vaso-constrictor nerves. Hitherto, I thought that adrenaline would have been contraindicated owing to the danger of the raised blood pressure driving more blood into the ruptured lenticular striate branch of the middle cerebral artery. In this case I used adrenaline accidentally, and I wonder if the raised blood pressure retarded the haemorrhage by slowing the rate of extravasation (Marie's law); the constriction of the aorta and large blood vessels serving also to reduce the haemorrhage. The case may interest your readers, as, personally, I am convinced that adrenaline is well worth trying in these cases, which are so often left to nature to cure.

Labour and Heart Disease

Dr. CHARLES J. HILL 'AITKEN (Kilnhurst, near Rotherham) writes: In connexion with two *Epitome* paragraphs dealing with the above subject (No. 131, August 18th, and No. 150, August 25th) I read in the late D. Berry Hart's *Midwifery* the following statement: " I early advocated the view, which has also been brought forward by Dr. Angus MacDonald and others, that the serious results in the third stage were due to an embarrassment of the right side of the heart . . . and that thus the best thing for the patient was not to hinder loss of blood in the third stage, but rather to see that the patient lost blood to a fair amount, and that if there were any doubt of this she should be bled from the arm " (p. 337). This was written in 1912, and Dr. Angus MacDonald died a great many years ago.

Medical Work in Basutoland

Dr. N. M. MACFARLANE, late principal medical officer in Basutoland, has compiled a record of medical work in this Territory. It is of special interest at the present time when there is a general movement to develop health services for native populations, for it shows how one small native State proceeded. The Territory of 11,000 square miles is populated by over half a million natives. Dr. Macfarlane describes the early work of the missionaries, who were solely responsible for scientific medicine until the appointment of the first Government medical officer in 1875. Details are given of the energetic pioneer work of the early officers, Drs. E. B. Hartley, H. S. Taylor, L. C. Daumas, and S. C. Reed. Small hospitals and free dispensaries came into being, and in the last decade of last century the medical work was growing apace. The South African War brought further expansion; the existing small hospital at Maseru was enlarged and modernized, and new ones were opened elsewhere. One achievement of this period was the almost complete eradication of small-pox, which had previously been endemic for many years. More than half a million vaccinations had been performed, and it had been made compulsory for all natives leaving the Territory to carry a vaccination certificate signed by a medical officer. The first leprosy asylum was established by one of the enlightened native chiefs, and this led the way to the opening of the Basutoland asylum in 1913. The usual difficulties followed its being conducted more as a house of detention than as a hospital. Despite the difficulty of financing a rapidly growing medical service, progress continued; sanitary areas were defined, and more medical officers of districts were appointed by the Government. Active work against leprosy continued, and paved the way for the complete survey some four or five years ago. The leprosy organization was inevitably planned on a rather expensive basis, its inception having preceded the more recent discoveries which have led to great economies.

A Schedule to the "National Formulary"

The Paddington Medical Society has issued a revised edition of their *Schedule to the National Formulary*, which shows the approximate and the relative cost of the formulae and of the dispensing fees in the *National Formulary* (1933). Copies can be obtained (price 1s.) on application to the honorary secretary, Paddington Medical Society, 81, Elgin Avenue, London, W.9.

Vacancies

Notifications of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 35, 36, 37, 38, 39, 40, 41, and 44 of our advertisement columns, and advertisements as to partnerships, assistantships, and locumtenencies at pages 42 and 43.

A short summary of vacant posts notified in the advertisement columns appears in the *Supplement* at page 172.